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Osler, Master of an Era

IAGO GALDSTON*

IT is a hundred years since Osler was born, and thirty since he died. It is fitting therefore that we should, so to say, conjure up his person, and reflect upon it. That is one warrant for the anniversary, that it provides the occasion for a reassessment of values. But to reassess Osler is rather difficult. The judgment of his contemporaries, their fulsome praise of him and the honors they conferred upon him both living and dead crowd too large upon our awareness to permit the exercise of independent judgment. The assessments of those who knew him in the flesh are intimidating both by their unison and unequivocal temper. For the re-evaluation of Osler there is wanted a longer perspective, knowledge of the intimate particulars of Osler's life, and such free play of judgment and opinion as only the stage disencumbered of those whose feelings might be hurt can afford.

If, however, we may not at this time reassess Osler, we can at least speculate about him, and for speculation two among several possible themes are particularly enticing: these are Osler the man, and Osler the physician.

On the score of the first, that is Osler the man, speculation must needs be doubly speculative. We are limited to reflect on what we *might* possibly know did we but first know the essential and missing facts about his inner and more intimate life. Cushing's *The Life of Sir William Osler*,¹ for all its fifteen hundred pages, beshrouds rather than reveals the intimate man.

That biography is full of stir and bustle. So much is told of what the man *did*, and so little of what he felt, and of his doings only those which decorum would countenance. This is not to take Cushing to task. We are told that Lady Osler, not unlike Lady Burton, "edited" the biography of her husband's life. Whatever the reason therefor, the facts are that we know too little of Osler's inner life to make the man entirely understandable.

And Osler the man is a provocative challenge to those who would neglect the ruling rags of man's existence. Osler's life is uncommonly full of judgments and paradoxes. It is certain that he was kindhearted and sin-

cere, without guile or pomposity. Yet he was also a confirmed practical joker, and the practical joke is ever an act of *cruel* aggression.

It is affirmed that Osler never made an enemy of any normal man; and that in itself renders him suspect. The Greeks banished Aristides because he was too good, and critical reason is always alerted by the presence of uncommon virtue. Osler was a most generous man, yet at times his generosity is embarrassing to contemplate, as when it embraces some too obscure functionary. No doubt it *was* praiseworthy. Yet that is its very disturbing aspect: so much that Osler did was praiseworthy!

The son of a minister, Osler first studied for the ministry, then turned to medicine. Three men were the heroes of his youth and life: William Arthur Johnson, James Bovell, and Robert Palmer Howard. To them he dedicated his *principles*.³ Johnson was a clergyman-schoolmaster with a taste for natural history. When bored or troubled Osler would scribble "James Bovell." Osler was devoted to his mother, and she lived to the age of 100. His father appears to have had the lesser influence upon his life.

What bearing may all of this have upon his marriage late in life (*act.* 42) to the widow of his friend; upon his "sadistic humor"; upon his reprobate *alter ego*, Egerton Y. Davis; upon his enormous drive, upon his addiction to arithmetical statements, upon his rôle as a collector and cataloguer?

We can only raise these questions, believing them valid. We cannot for want of particular knowledge venture further. Yet it is to be hoped that before too long the wanted particular knowledge will be made available so that we may really know what manner of man was this Osler. One thing seems certain, in the presence of such knowledge Osler will become a more familiar, but not a less esteemed personage, for whatever the mainspring of his action, he was in effect a good man whom many loved, and to whom countless were beholden in countless ways.

On Osler the physician we may speculate with greater facility and assurance. On this score most of the pertinent facts are known. The speculation lies in how the facts are summated. There are three phases to Osler the physician; the practitioner, the teacher, and the author of the *Principles*. They are in effect but three facets of his medical personage. We can hardly presume to comment on Osler the practitioner, beyond repeating what is already well known, that his contemporaries considered him an excellent diagnostician. He appears to have been less acclaimed as a therapist, though this may be due to the fact that serving as a diagnostician-consultant, therapy was left to the consulting physician. Osler was not in any sense a thera-

³ Osler, William. *The principles and practice of medicine*. New York, 1892.

peutic nihilist, but he had little use for the motley array of drugs and remedies common in his apprentice years.

Osler the teacher, and the author of the *Principles*, interests us most. In these he was the master of an era which crowned an epoch in medical history. It is not likely that any shall inherit his crown (as none has to this day) for the epoch of which he was master came to an end even before his death in 1919. Osler was the last of the great physicians whose competence and preëminence rested solidly on a foundation of thorough training in, and knowledge of, classical pathology.* This is not to deny that there are not even now excellent physicians well trained in pathology, nor is it intended to disparage the value of the study of pathology in the training of the physician. It is intended rather to affirm that Osler was preëminently a pathologist, and that he visualized, taught, and wrote medicine, in the perspective of pathology. He could hardly have done otherwise, for that in essence was the nature of his training and the substance of his experience. Pathology was the foundation of the medicine he learned and the medicine he taught.

Osler crowned an era that came to an end during his life, and his *Principles* is the last epitome of that era. It is doubtful, however, that Osler ever appreciated all this. Welch, who was Osler's contemporary and collaborator, and who like Osler *began* as a pathologist, did appreciate the passing of the era. Osler, however, appeared to believe, tacitly rather than affirmingly, that medicine would progress quite along the line, or pattern, of past progress, and quite in the way it was reflected in his textbook. Different sections might be altered, enlarged, or abridged, but the skeleton, the schema, would endure. Osler was not alone in this belief; he was but one among the very vast majority. That majority, though somewhat reduced, still obtains today.

Major Greenwood is of the opinion that Osler was impervious to intellectual experience: "After he left Canada [he was then 35 years old], Osler's intellectual growth was in extent rather than in depth; he covered a wider and wider surface, but he struck no roots."⁵ Osler's framework of medical thought and concept was little affected by the rise of the sciences of endocrinology, nutrition and psychiatry. The data of these specialties, in so far as they could be *written into* his text, found place in his *Principles*. *But their effect upon his outlook and understanding was additive rather than alterative.*

"Osler was a pathologist of the old fashioned type." Precisely what this implies can be gathered clearly and succinctly from the memorable address delivered by the archpriest of pathologists, Rudolf Virchow, at the XIth International Congress of Medicine, held in Rome in 1894. Virchow spoke on Morgagni and the Anatomical Idea. The burden of his thesis was the following. Before Morgagni and ever since the days of Hippocrates, the principal concern of medicine was to define the nature of disease, the *Natur der Krankheit*. Morgagni, who approached the study of disease as an anatomist, was not concerned with the *nature* of disease but with its *locus*. The title of his great work was *De sedibus morborum*. The great service of Morgagni, according to Virchow, was to demonstrate *ad oculos*, that "there is no such thing as a sick body, altered in each of its parts. This is the sense of the words '*sedes morbi*' which Morgagni set forth as the quintessence of his discovery."⁷

What Morgagni had initiated was thereafter developed by others, and

⁵ Greenwood, Major. *The medical dictator and other biographical studies*. London, 1936. "Osler of 'Osler,'" p. 153.

⁶ Greenwood, *ibid.*, p. 151.

⁷ Virchow, Rudolf Ludwig Karl. *Morgagni*

und der anatomische Gedanke [Morgagni and the anatomical idea]. An address delivered at the XIth International Congress of Medicine in Rome, March 30, 1894. Berlin, 1894, p. 21.

the advance of medicine can be summed up in the saga of the search for the seat of disease, that is "from organs to tissues, from tissues to cells." The practice of medicine followed suit, adopting the principle of "local treatment" and applying it in ever more refined and particular ways to the innermost parts of the body heretofore considered unreachable. With the advance of the science of cellular pathology both pharmacology and surgery became more local in their purview and objectives.

Ubi est morbus, Virchow affirmed, is the query with which the study and examination both of the living patient, and the dead body must be initiated. In this concept of specificity, initiated with the quest for the *sedes morborum*, and expanded to embrace *local*, i.e., specific diagnoses and specific therapy, Virchow saw the apogee of modern medicine. The future could not but follow the tangent drawn from Morgagni to Virchow! Virchow ended his peroration with the following words: "It is this thought [that of the seat of disease] which dominates modern physiology and pathology. Whether you chose to trace it, with me, back to the cells, or formulate it otherwise, it will assuredly remain the thought of the future, and this future will count its inception from the days of Morgagni. To him the honor!"

Involved but not too sharply revealed in the citations given above is Virchow's triumphant rejection of humoral pathology. To demonstrate the seat of the disease was in his judgment tantamount to disallowing, discrediting, and disproving humoral pathology, with its ideas on *dyscrasia*, and its concept of the sick man. There is no such thing as a sick body, Virchow said. "In every sick person there remains a considerable, yes as a rule, the greater portion of healthy being, and that which is sick or even dead, constitutes but a part of the body."

tery of life. He was born in the right time, and with the right gifts for his time. His great credit lies in the skill and perseverance with which he adapted his talents and temperament to the accidents and circumstances of his time. Born in any age, it seems certain that Osler would have "charmed" his contemporaries. But, whether he also would have been *the* Osler of "Osler" seems rather doubtful.

One can fancy Francis of Assisi a saint in every age, Abelard a great inquisitor unbounden by time or clime, and Leonardo exercising his genius no less on the atom than on aught else. But Osler seems fixed to the period which he adorned. He cannot be transposed.

I cannot quite agree that "in a few generations Osler will be as soundly forgotten as Thomas Watson or even William Jenner." I rather believe that the future will deal kindlier with him, and that it will assess him, less the fine intellect and more the man who to the best of his appreciable abilities embodied, applied, and transmitted all that is finest and best in the Doctor.

Osler on Miner's Phthisis

GEORGE ROSEN

WILLIAM OSLER'S deep and abiding interest in pulmonary disease is well documented. Evidence of this tendency may already be found during his early Montreal years. At this period in the young professor's career his concern with pathology outweighed most other interests. A report "On the Pathology of Miner's Lung" presented by Osler in 1875 to the Medico-Chirurgical Society reflects this preoccupation, but is also noteworthy in several other respects. Although a minor, but significant contribution to our knowledge of an important occupational disease, this report clearly reveals some of the basic qualities which characterized Osler throughout his career.

For many years it was denied that the black lung of miners was the direct consequence of their occupation.¹ It took decades of investigation and controversy to establish the fact that by inhaling a dust-laden atmosphere the pulmonary organs of miners became impregnated with dust. Not until the extraneous origin of miner's black lung had been irrefutably established was a solution of the problems of pulmonary anthracosis possible. In 1860 light was thrown upon the entire subject of miner's lung by the observations of two investigators working independently of each other. Both of these men, T. B. Peacock and Ludwig Traube, isolated particulate matter from the lungs of workers employed in dusty atmospheres. Peacock discovered in the emaciated lungs of buhrstone cutters gritty particles apparently identical with the stone upon which the workers had been employed. In the lungs of a patient who for more than ten years had worked in an atmosphere filled with coal dust, Traube found black particles which were coal. In the wake of his report appeared a number of important contributions confirming his findings and adding further information to the

may be regarded as the first step in a series of degenerative changes. Such general infiltration of the tissues by a foreign matter cannot be without a strongly irritating action, the final effect of which would be a proliferation of the epithelial and connective tissue elements, with the result of obliterating the air cells and the formation of firm indurated areas. The larger these become, the more the cellular elements participate in the process, so much the more likely will they be to soften at the centres, and finally form cavities. . . . In the lungs of all individuals who die of this disease these cavities, which are no doubt often bronchiectatic, are described, surrounded by indurated areas, while the comparatively healthy sections are intensely black and emphysematous. . . . In some instances the continual inhalation of the dust in mines would appear to produce very little effect, for cases are mentioned of miners exposed for years to the same influences to which others succumb, and yet who were but slightly affected. Predisposition to lung disease is an important factor here, and it has been found that where this exists, they die at a much earlier age than those without this hereditary weakness, which need not, however, necessarily be a true tubercular diathesis. Indeed, in reading over the records of the *post mortems* in this disease, one is struck by the absence of any mention either of true tubercles or caseous masses, and in neither of the cases before us do these elements occur. . . . In its essence the whole disease would appear to consist in an overgrowth—a hyperplasia—of the fibrous tissue of the lungs, induced by the chronic irritation to which they are subjected by the inspired particles of coal dust, a veritable cirrhosis, or, as it might appropriately be called, the black Cirrhosis of miners. This certainly is the most natural view to be taken of these two cases, and accords best with their general and histological characters.

Finally, Osler concluded his discussion, "We are still in the dark as to how all this takes place, how the air cells become converted into firm hard areas . . ., or why, again, in the same lung, some of the intensely dark spots are solid, while others are emphysematous."⁶

Two other aspects of this report deserve attention. An unfailing passion for medical history and an indefatigable interest in research run through the career of William Osler, and both of these characteristics appear in the young professor's paper. Osler gives a succinct but very objective review of the controversy on the origin of pulmonary pigmentation. He reveals an acquaintance with the British, French, and German views on the subject, and correctly assigns the credit for advancing the knowledge of anthracosis.

Pointing out that the German and French students of lung pigmentation refused to recognize the external origin of anthracosis, he says:

The English observers (and with them several French), one and all, as far as my reading goes, from Pearson, who in 1813 first described the affection, took a more practical and common sense view, and attributed to it solely an extraneous origin. Having many more opportunities of observing the conditions under which miners worked and knowing the foul, sooty atmosphere of the mines, they were led to connect cause and effect, the dust with the disease, and so arrived at the truth years before

⁶ Osler, *op. cit.*, pp. 158-160.

the Germans, to whom, however, the credit is due of having placed the fact upon an histological and experimental basis. They demonstrated the presence of dotted cells and other structures characteristic of vegetable tissue in the coarser particles obtained from the lungs, and, also, proved that the lungs of animals might be made of a dark color by exposing them for a length of time to a sooty atmosphere.⁷

Osler then demonstrated two particles of coal obtained from his cases.

Worth noting, however, is Osler's apparent ignorance of a brief report in 1869 by J. T. Carpenter, a Pennsylvania physician.⁸ The fact that this account was published in the *Transactions of the Medical Society of the State of Pennsylvania* may explain why Osler was not aware of it. At any rate, Carpenter's statements are of considerable interest. "The penetration of solid, carbonaceous matter into the lungs," he claimed, "we all have verified by *post-mortem* examinations, as well as by the characteristic black sputa which accompany every case of bronchial or lung disease among miners." Commenting on "miner's asthma," Carpenter pointed out that the condition "is chronic bronchitis, with thickening of the air-passages, emphysema and nervous distress in breathing. These chronic troubles may last a lifetime, without being rapidly fatal, or necessarily so. But acute pneumonia supervenes in many cases on some exposure and is very apt to prove fatal. If not, a chronic softening of the lungs may occur, in other words, phthisis, which is a frequent disease among these men and generally an incurable one."⁹

The last subject that Osler considers is the pathogenesis of anthracosis. After a preliminary reference to so-called physiological anthracosis, he explains that after passing through the alveolar wall, particles follow the course of the lymphatics. ". . . Where these are most abundant," Osler continues, "there the pigment is in the greatest quantity, as about the connective tissue of the vessels and bronchi, the interlobular septa, and, above all, just beneath the pleura. Once inside the lymphatic vessels a large proportion of the granules is carried on to the glands at the root of the lung, and is there permanently fixed in the cellular elements, hence the intensely dark color of these in most persons over fifty. This fixation of the carbon granules in cellular bodies is very remarkable, and must be regarded as an effort of the economy to render harmless what might otherwise be very irritating substances."

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⁷ With reference to this point see also Osler, *loc. cit.*

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⁶ Osler, *op. cit.*, pp. 158-160.

phthisis, axe grinders' and file sharpeners' phthisis. "In the past five years," he said, "I have had three instances of this variety (that is, fibroid phthisis due to dust inhalation) under my care. I show you here a lung presenting what is known as the carbonaceous cirrhosis, or miners' phthisis. You see that the greater portion of it is converted into a mass of firm, dark tissue, looking more like a bit of hard coal than a lung. The greater portion is indurated by this growth of fibroid tissue and the deposition of these dark carbonaceous particles. That the dark coloring matter in the lungs is due to the inhalation of coal particles, is proved by the fact that on examination you can see portions of the vegetable tissue of the coal."¹⁸

It is interesting to note that while Osler employs the terms *anthracosis* for coal miner's phthisis and *siderosis* for the form of fibroid phthisis to which workers in iron mines are subject, he does not use the term *pneumoconiosis* recommended by Zenker in 1867 to designate all pulmonary conditions resulting from the inhalation of dust. This is all the more noteworthy as it was Zenker who proposed the term *siderosis*.

With Osler's departure from Montreal his contributions on miner's lung cease. However, his interest in the subject did not end, for in 1889 he refers to it in a broader context. On April 3, 1889 he addressed the Alumni Association of Bellevue Hospital in New York, the subject of his address being "On Phagocytes."¹⁹ In connection with phagocytosis as a physiological process and its significance in pathological conditions, he called attention to "the remarkable activity of the pulmonary phagocytes."²⁰

Discussing dust inhalation and the rôle of the cellular elements in disposing of inhaled particulate matter, Osler remarked that to see the steps in this process in perfection ". . . one must study the early stages of anthracosis, particularly in those exceptional cases which we see occasionally when a miner has been killed by accident or dies of acute disease."²¹ He then describes the phagocytic phenomena that had been observed in the case which he had reported in 1875. In this discussion Osler also refers to the extensive study of experimental pneumoconiosis published by Arnold in 1885, thus indicating again his interest in the subject and his knowledge of the relevant literature.

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ous sorts, and, also to demonstrate the rapidity with which the lymphatic glands are affected. . . ."¹² In these experiments he injected the lymphatics of kittens with solutions of India ink to determine the distribution to the pigment particles. The experiments showed that irritating materials were taken up with great rapidity by the cellular elements. He describes phagocytic phenomena which impressed him greatly.

The conclusions with which Osler summed up his presentation were:

1. That in the early stage the process [in miner's lung] is confined to an increase in the fibrous elements about the bronchioles and vessels, and in certain emphysematous areas—a genuine Cirrhosis, or, as some would prefer to call it, an interstitial Pneumonia.

2. A considerable proportion of the carbon is contained in large cellular elements, which are specially abundant in the less pigmented, healthy portions, and in these it probably remains without much injury to the lung parenchyma. Another large part of the pigment lies free among the elements of the tissues, this being specially the case in the indurated spots, in the thickened pleura, and at the junction of the alveolar septa.

3. The extraneous origin of the carbon is proved by the detection in the lung of portions of fossilized vegetable tissue in the form of scalariform and dotted ducts.¹³

While at Montreal, Osler observed a number of other cases of miner's lung or miner's phthisis. In 1879, he published the case of a sixty-year-old metal miner.¹⁴ As he remarks in his conclusion, this case supplements the one reported in 1875, where the disease was in an early stage. The pulmonary findings of extensive fibrosis and emphysema sustained his earlier conclusion that the essence of the disease appears to be a hyperplasia of the fibrous tissue of the lungs arising from chronic irritation.

On May 2, 1879 Osler presented a specimen of miner's lung to the Medico-Chirurgical Society of Montreal.¹⁵ The following year, at a meeting of the Society on June 11, 1880, he presented another miner's lung.¹⁶ According to the report of the meeting, this was the third case Osler had encountered in the autopsy room of the Montreal General Hospital in the previous three years.

No further case reports were forthcoming, but on May 10, 1881 Osler gave a lecture on a case of fibroid phthisis.¹⁷ In the course of this lecture, he discussed fibroid phthisis due to the inhalation of dust, pointing out that this disease went under a variety of names—miners' phthisis, stone-cutters'

¹² *Ibid.*, p. 164.

¹³ *Ibid.*, p. 168.

¹⁴ Miners' phthisis. Reported by Mr. Rankine Dawson. Medical cases under Dr. Osler, *Canada med. surg. J.*, 1878-79, 7, 452-454.

¹⁵ I. Miner's lung; II. Atrophy of kidney. (Specimens presented, Medico-Chirurgical So-

cieté of Montreal, May 2, 1879.) *Canada med. Record*, 1878-79, 7, 220.

¹⁶ Medico-Chirurgical Society of Montreal, *Canada med. surg. J.*, 1880-81, 9, 32.

¹⁷ Osler, William. Clinical lecture on a case of fibroid phthisis. *Canada med. surg. J.*, 1880-81, 9, 641-650.

phthisis, axe grinders' and file sharpeners' phthisis. "In the past five years," he said, "I have had three instances of this variety (that is, fibroid phthisis due to dust inhalation) under my care. I show you here a lung presenting what is known as the carbonaceous cirrhosis, or miners' phthisis. You see that the greater portion of it is converted into a mass of firm, dark tissue, looking more like a bit of hard coal than a lung. The greater portion is indurated by this growth of fibroid tissue and the deposition of these dark carbonaceous particles. That the dark coloring matter in the lungs is due to the inhalation of coal particles, is proved by the fact that on examination you can see portions of the vegetable tissue of the coal."¹⁸

It is interesting to note that while Osler employs the terms *anthracosis* for coal miner's phthisis and *siderosis* for the form of fibroid phthisis to which workers in iron mines are subject, he does not use the term *pneumonoconiosis* recommended by Zenker in 1867 to designate all pulmonary conditions resulting from the inhalation of dust. This is all the more noteworthy as it was Zenker who proposed the term *siderosis*.

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William Osler's contribution to the study of miner's lung may now be summed up. Most significant is his emphasis on the phagocytic process. The theory that the endothelium is the source of phagocytic cells, capable of wandering into the alveoli and removing any foreign particles present

¹⁸ *Ibid.*, p. 347.

¹⁹ *Ibid.*, p. 375.

²⁰ *Ibid.*, p. 365.

²¹ *Osler, William, On phagocytes. Med. News*, 1889, 54, 323-324, 221-222.

there, was suggested by Slavjansky in 1869 on the basis of his experiments.²² In 1876 von Ins was able to show that dust in the alveoli is removed by phagocytic cells (leukocytes) and transported into the interstitial tissue in this manner.²³ Osler thus precedes von Ins and in some measure anticipates his work. His report of 1875 with its observations on the activities of phagocytic cellular elements in the lungs and with the results of his experiments on the distribution of pigments by the lymphatics clearly points in the direction whence advances in the knowledge of the subject were to come. In addition, he added further evidence to substantiate the external origin of pulmonary pigmentation in miners. Finally, in these papers on miner's lung can be seen those qualities which made Osler an outstanding teacher and doctor. The ability to fuse pathology, clinical medicine, history, and experimental research into an organic unity, and to view medical problems from a broad biological viewpoint, is clearly evident in these early studies.

²² Slavjansky, K. Experimentelle Beiträge zur Pneumonokoniosis Lehre. *Virchows Arch.*, 1869, 48, 326-332.

²³ Ins, A. von. Experimentelle Untersuchungen über Kieselstaubinhalation, *Arch. exp. Path. Pharmak.*, 1876, 5, 169-194.

Chiron the Centaur

WARREN R. DAWSON*

"If the poet's tongue might voice the prayer that is on the lips of all, I would pray that Chiron, the son of Philyra, who is dead and gone, were now alive again."

—PINDAR

CHIRON the Centaur, the tutor of Asclepius (or Æsculapius), is a prominent figure in the legendary history of medicine and a personality who had in early times won a high reputation. Classical literature is full of allusions to his wisdom and prestige. The reputation of Chiron survived until the Middle Ages, and his name is still associated with more than one medicinal herb.

The Centaur Chiron was the offspring of Cronus (Saturn) and Philyra, a daughter of Ocean. She was a sylvan nymph, associated with the lime-tree.¹ Cronus met with her in Thessaly, and, according to some accounts, transformed himself into a horse in order to escape the notice of his wife Rhea; according to others, he assumed equine shape because Philyra had turned herself into a mare in order to elude him.² On the birth of their child, Philyra was so distressed when she beheld it that she prayed to be transformed into some other shape. Zeus answered her prayer, and she became the lime tree.³ Apollonius Rhodius says: "She brought forth mighty Chiron, half like a horse, half like a god."⁴ Other writers speak of Chiron as "a Centaur of double form,"⁵ or as "a half-man, compounded of the body of a tawny horse,"⁶ and Lucan says only that he had the feet of a horse.⁷

The Centaurs, of which there were many, were a wild, uncouth and lawless race. Most of them were the offspring of Centaurus (Kentauros), the son of Ixion and Nephele, their mothers being high-spirited Magnesian mares.⁸ They dwelt in caves about Mount Pelion in Thessaly, living free, drunken and sensuous lives. Chiron dwelt amongst them, but his charac-

ter and pursuits differed wholly from theirs. He was just, gentle, righteous and learned, and friendly both to gods and men. He was highly skilled in the arts of hunting, music and medicine, and in popular tradition was held to be the discoverer of the medicinal values of simples and of the methods of using them. His amiable disposition is evidenced in many ways, and in this connection reference may be made to the greeting he gave to the Argonauts as their ship sped from the shores of Thessaly. "And down from the mountain-top to the sea came Chiron Philyrides,⁹ and where the foaming surf broke he dipped his feet, and with much waving of his massy hand, he wished them a happy home-coming and a safe voyage."¹⁰ Homer speaks of Chiron as "the most just of Centaurs"¹¹ and his wise and kindly character is often referred to by others.¹² His praises have been very beautifully sung by Pindar: "If the poet's tongue might breathe the prayer that is on the lips of all, I would pray that Chiron, son of Philyra, who is dead and gone, were now alive again,—he who once ruled far and wide as the offspring of Cronus, who was the son of Heaven. Would that that rugged monster with spirit kindly unto men were reigning still in Pelion's glens, even such as when, in olden days, he reared Asclepius, that gentle craftsman who drove pain from the limbs that he healed,—that hero who gave aid in all manner of maladies."¹³

Chiron's gentleness, wisdom and strength made him eminently fit to be the protector and instructor of children and many of the most celebrated heroes of Greece were brought up and taught by him. The list of Chiron's pupils is a long one, but first and foremost comes Asclepius, himself destined to become the god of medicine. Reference has already been made, in the passage just quoted from Pindar, to Chiron's tutorship of Asclepius. Apollodorus relates that the infant Asclepius, the child of Apollo and the nymph Coronis, was snatched by Apollo from his mother's arms as she was burning on the pyre (for such was her punishment inflicted by her divine spouse for playing him false), and taken by him to Chiron, by whom the child was reared and instructed in the arts of healing and hunting. Asclepius gained great fame as a surgeon and he brought his craft to such a pitch that he could not only avert disease and heal the sick, but could even raise the dead.¹⁴ Apollodorus goes on to state the names of some of

⁹ That is to say, Chiron the son of Philyra. This name is often bestowed upon him: e.g., Hesiod, *Theogony*, 1002; Pindar, *Pyth. Odes*, iii, i; ix, 30; Ovid, *Ars Amatoria*, i, 11; *Fasti*, v, 391; etc.

¹⁰ Apollonius Rhodius, *Argonautica*, i, 553-6.

¹¹ *Iliad*, xi, 832.

¹² E.g., Hyginus, *Astronomica*, ii, 38; Virgil, *Georgics*, iii, 550; Ælian, *De Nat. Animalium*, ii, 18; Euripides, *Iphigenia in Aulis*, 705-710; etc.

¹³ Pindar, *Pyth. Odes*, iii, 1-7. The translation here quoted is that of Sir John Sandys.

¹⁴ Apollodorus, iii, 10, 3. Other accounts in Pindar, *Pyth. Odes*, iii, 24-67; Pausanias, ii, 26, 6; Ovid, *Metamorph.* ii, 590-632.

those whom, being dead, Asclepius restored to life, and supplies the interesting detail that he was enabled to raise the dead by means of the blood of the Gorgon, given to him by Athena. He used the blood that had flowed from the veins on the left side of the monster's body as a poison for mankind, and blood from the right side for their salvation (*πρὸς σωτηρίαν*).¹⁵ Pindar again says of Asclepius: "And those whosoever came suffering from the sores of nature, or with their limbs wounded, either by gray bronze or far-hurled stone, or with bodies wasting away with summer's heat or winter's cold, he loosed and delivered divers of them from diverse pains, tending some of them with kindly incantations, giving to others a soothing potion, or, haply, swathing their limbs with simples, or restoring others by the knife."¹⁶ Apollodorus relates that the skill and success of Asclepius were such that Zeus grew jealous of his powers and killed him with a thunderbolt.¹⁷ Diodorus Siculus gives a different version: he says that the success of Asclepius in healing the living and raising the dead had so reduced the population of the underworld that Zeus slew him because of the complaints of Pluto that his domain was becoming impoverished.¹⁸ Pindar ascribes yet another motive for the vengeance of Zeus. "But, alas!" he said, "even the lore of leech-craft is enthralled by the love of gain; even he [Asclepius] was seduced by a splendid fee of gold displayed upon his palm, to bring back from death one who was already its lawful prey. Therefore the son of Cronus with his hands hurled his shaft through both of them and quickly reft the breath from out their breasts for they were stricken with sudden doom by the gleaming thunderbolt."¹⁹

According to a late tradition, Apollo himself, the father of Asclepius, had been taught by Chiron.²⁰

Another son of Apollo, the rustic deity Aristaeus, whose mother was Cyrene, was also trained by Chiron. Cyrene bore the infant on Mount Pelion, and the babe was carried to the cave of Chiron, there to be reared. Chiron taught Aristaeus the arts of healing and of prophecy.²¹ Chiron himself had prophesied that on the birth of Aristaeus, the nymphs would drop nectar and ambrosia upon his lips and that he should be a guardian of flocks.²² Aristaeus grew up and was wedded to Autonoe, the daughter of

Cadmus,²³ and their child was Acteon the hunter. Acteon, like his father, was placed in the Centaur's care, and Chiron taught him his craft; but he came to a terrible end, for he was devoured by his own dogs. According to Apollodorus, Acteon met his death through the vengeance of Artemis, whom he had seen bathing with her attendant nymphs. The goddess transformed him into a deer and incited his pack of hounds to give chase and to kill and devour the animal. When they had done this, they sought their master, and whining pitifully, came to the cave of Chiron, who fashioned an image of Acteon to console the grief of the faithful dogs who had, all unknowingly, destroyed their master.²⁴

Chiron reared Achilles, of all Greek heroes the most renowned, the son of Peleus and Thetis. Peleus brought his infant son to the cave of Chiron who received the child and fed him upon the entrails of lions and wild-boars and upon the marrow of bears.²⁵ This diet was evidently intended to impart to the child the strength and courage of the wild beasts. But according to Philostratus, the diet of the infant was of a gentler kind, and consisted of honeycombs and the marrow of deer, whereby he would become, on the same principle, sweet of disposition and fleet of foot.²⁶ Chiron instructed Achilles in the art of healing with simples²⁷ and also taught him to perform upon the lyre.²⁸ According to tradition there was a book of the Precepts of Chiron for the instruction of Achilles.²⁹ When Chiron greeted the departing Argonauts, the infant Achilles was brought out in order that his father might see him.³⁰

Jason, too, was reared by Chiron, and he spoke of his tutor as "the divine Centaur."³¹ Medeus, Jason's son, was also received by Chiron,³² as was Melampus, who became a skilled magician and knew the language of the birds.³³ Tradition ascribed other gods and cult-heroes to the care or influence of Chiron. Amongst these are Dionysus,³⁴ Podalirius and Machaon, the sons of Asclepius,³⁵ and Phoenix, the son of Amyntor. Phoenix had been

²³ Apollodorus, iii, 4, 2.

²⁴ Apollodorus, iii, 4, 4; Diodorus Siculus, iv, 81 (who omits the mention of Chiron and the image); Ovid, *Metamorph.* iii, 131-252, tells the story with much poetic detail.

²⁵ Apollodorus, iii, 13, 6.

²⁶ Philostratus, *Heroica*, xx, 2. For many instances of the eating of parts of wild animals in order to acquire their attributes, see Sir J. G. Frazer, *The Golden Bough*, ed. 3, *Spirits of the Corn and of the Wild*, vol. ii, ch. xii, pp. 138 seqq.

²⁷ Homer, *Iliad*, xi, 830-832.

²⁸ Ovid, *Ars Amatoria*, i, 11-16.

²⁹ *Χείρωνος Ὑπεθήκαι*. This was attributed

to Hesiod; see Pausanias, ix, 31, 5. For other references to Chiron's tutorship of Achilles, see Pausanias, iii, 18, 2; Plutarch, *De Vita Homerici*, ccii; Lucan, *Pharsalia*, x, 15, 1; Ælian, *De Nat. Anim.* ii, 18; Pliny, *Nat. Hist.*, xxv, 19.

³⁰ Apollonius Rhodius, *Argonaut.*, i, 558.

³¹ Pindar, *Pythian Odes*, iv, 101-119; *Nemean Odes*, iii, 54. For the word *ὄψις*, applied to the Centaurs, cf. Homer, *Iliad*, i, 268; ii, 743.

³² Hesiod, *Theogony*, 1000-2.

³³ Columella, *De Re Rustica*, x, 349; Virgil, *Georgics*, iii, 558, Apollodorus, i, 9, 11.

³⁴ Ptolemaeus Hephaestionis, *Nova Historia*, iv.

³⁵ Xenophon, *Cyngeticus*, i, 2.

blinded by his father on a false charge of having seduced one of his concubines. Peleus brought him to Chiron who restored his sight, and he then became king of the Dolopians.³⁶

Chiron rescued Peleus from the plot against his life engineered by Astrydamia, the wife of Acastus, when he rejected her guilty overtures. She falsely accused Peleus to her husband of having attempted her virtue.³⁷ Acastus, who was engaged in a contest with Peleus, accordingly deserted him, and whilst Peleus was sleeping on the slopes of Mount Pelion, Acastus took from him his sword and hid it in cows' dung. Peleus, awaking, sought in vain for his weapon and, thus disarmed, was caught by the Centaurs who would have destroyed him but for the timely aid of Chiron who rescued him and recovered and restored his sword.³⁸ Chiron was ever friendly to Peleus: on his marriage with Thetis, Chiron gave to Peleus a magic spear of ash-wood,³⁹ and, as already noted, he took charge of Peleus's infant son Achilles.

Chiron did not live alone: he had a wife and daughters who shared with him the responsibilities of rearing the various children that were placed in his charge. When Chiron came to the water's edge to bid farewell to the departing Argonauts, he was accompanied by his consort (παράκοιτις) who carried the infant Achilles in her arms and showed the child to his father.⁴⁰ She is not named by Apollonius Rhodius, but we know from Ovid that Chiron had a daughter by Chariclo,⁴¹ presumably the same Chariclo, a nymph, who became by Everes (the son of Udaeus, one of the Spartans who sprang from the dragon's teeth of Cadmus) the mother of Tiresias, the blind seer.⁴² Pindar speaks of Chariclo in conjunction with Chiron and his mother Philyra, but he does not say that she was his wife, and in the same passage he mentions "the pure daughters of the Centaur,"⁴³ of whom not one is named. According to Ovid, the name of Chiron's daughter by Chariclo was Ocyrrhoë. The girl was skilled in her father's arts and was also endowed with the power of prophecy. She predicted that Asclepius would become so skilled as a physician that he would incur divine wrath, would perish by a thunderbolt, but would live again as a god. Of her father Chiron,

³⁶ Apollodorus, iii, 13, 5; Propertius, ii, 1, 60. Herodotus, *Hist.* iv, 237-238, gives a different version of the account against Theron, and does not mention a Centaur nor Chiron's cure.

³⁷ The false accusation by the guilty wife is frequent in folklore and myth. It occurs in the ancient Egyptian "Story of the two brothers" and in the well-known episode of Peleus's wife. Many instances have been collected by G. Meppan, *Popular Tales of Ancient*

Egypt, London, 1915, Introduction, pp. xvii-xx.

³⁸ Apollodorus, iii, 13, 3; Pindar, *Nemean Odes*, iv, 92-100 (who calls Acastus's wife Hippodamia).

³⁹ *Iliad*, xvi, 120; Apollodorus, iii, 13, 5.

⁴⁰ Apollonius Rhodius, *Argonautica* i, 557-8.

⁴¹ Ovid, *Metamorph.* ii, 636.

⁴² Apollodorus, iii, 6, 7.

⁴³ Pindar, *Pyth. Odes*, iv, 102-3.

she predicted that he, though born immortal, would long to die on being tormented by the poisonous blood of a dire serpent, and that his wish would be granted. Like many other prophetesses who foretold the future, the utterances of Ocyrrhoë brought upon her head the wrath of the gods: her voice failed and she could utter words no more, her face and her limbs changed their form, her fingers and toes coalesced into hoofs, and she became a mare, neighing and cropping grass, her flowing locks transformed into a mane.⁴⁴

The death of Chiron is one of the most picturesque episodes in Greek mythology: it came about in this wise. Hercules, in search of the Erymanthian boar, came to Mount Pholoe in Arcadia, and was there entertained by the Centaur Pholus⁴⁵ in his cave. After eating his victuals Hercules called for wine, of which Pholus had but a single jar, and this he feared to open because it was not his own property but belonged to all the Centaurs in common.⁴⁶ Yielding at length to the entreaties of his guest, Pholus broached the jar and the scent of the wine at once attracted all the other Centaurs who rushed to the cave armed with stones and tree-trunks. Two of them, bolder than the rest, entered the cave but Hercules repelled them with brands. Of the rest, some were killed, and others were pursued to Malea, where Chiron had taken up his abode after the Centaurs had been expelled by the Lapiths from Mount Pelion.⁴⁷ Here the fugitives took shelter in Chiron's cave, and Hercules shot an arrow at them. By accident the weapon struck Chiron upon the knee, and Hercules, deeply distressed, rushed to the assistance of the wounded Centaur, drew out the arrow and applied a healing herb. All was of no avail, for the wound was mortal; but Chiron, being immortal, could not die, though he longed for death. Prometheus offered himself to Zeus to be immortal in Chiron's stead, and Chiron, thus released from immortality, died. Thereupon the Centaurs scattered and fled in all directions, save only Pholus who returned to his cave. Pholus took up an arrow that had killed one of his fellows and as he examined it, it slipped from his hand, pierced his foot, and instantly killed him. Hercules then buried Pholus and departed to continue his quest for the boar.⁴⁸

⁴⁴ Ovid, *Metamorph.* ii, 632-675.

⁴⁵ Pholus was the son of Silenus and a tree-nymph (Ash). He, like Chiron, was amiable and gentle and altogether different in his nature from the other Centaurs.

⁴⁶ Diodorus Siculus, iv, 12, states that this wine-jar was the gift of Dionysus who ordered that it should not be opened until Hercules should come.

⁴⁷ The fight with the Lapiths was caused by

the attempt by the Centaurs to carry off Deidamia (called Hippodamia by Diodorus), on the day of her marriage with Pirithous, king of the Lapiths and son of Ixion. It ended in the expulsion of the Centaurs, who were driven from Pelion with the help of Theseus. See Diodorus Siculus, iv, 69, 70; Plutarch, *Theseus*, 30; Ovid, *Metamorph.* xii, 210-535.

⁴⁸ Apollodorus, ii, 5, 4.

Such is the outline of the story as related by Apollodorus. It is retold elsewhere, but with many variations of detail. Diodorus Siculus gives an account which is in the main the same as that of Apollodorus, but it is more detailed in its description of the combat between Hercules and the Centaurs.⁴⁹ Ovid presents a widely different version which omits all reference to Pholus and the other Centaurs and asserts that Chiron himself, fingering the shafts in the quiver of Hercules, dropped one of them upon his left foot and so compassed his own death.⁵⁰ According to others, it was not Chiron, but a Centaur named Pylenor, who was killed by the arrow of Hercules.⁵¹

Thus was the prophecy of Chiron's daughter fulfilled. She had declared that her father, though immortal, would long for death,⁵² and that his death would be caused by the blood of a dread serpent. The arrows of Hercules were poisoned, according to Ovid with the blood,⁵³ and according to others with the gall,⁵⁴ of the Hydra.

When Chiron exchanged his immortality with Prometheus, he became the constellation Sagittarius, or the Centaur.⁵⁵ But the kindly Centaur, thus elevated to the skies, still had his cult upon earth, for the Magnesians sacrificed to him as a divine physician, and offered to him the first-fruits of their herbs.⁵⁶

Many plants are associated with Chiron's name. The four panacæas—Asclepion, Heracleon, Chironion and Centaurion—were said to have been discovered by him.⁵⁷ Chiron was also the discoverer of the white Bryony, the *Ampelos chironia* of Pliny and the *Bryonia alba*, L., of botanists.⁵⁸ The Centauria is said to have healed Chiron when the arrow of Hercules pierced his foot, but according to the accounts of his death quoted above, the wound was mortal and could not be healed. His name was also given to open ulcers that refuse to heal: "Old ulcers which are difficult to cicatrize are called Chironian, as if requiring Chiron himself to heal them."⁵⁹

The name of Chiron the Centaur has become intimately associated with the *Herbarius* of Apuleius. This herbal was very popular in the Dark Ages, and many manuscripts of it are known. The author of it is alleged

⁴⁹ Diodorus Siculus, iv, 12.

⁵⁰ Ovid, *Fasti*, v, 301-2, 5.

⁵¹ Pausanias, vi, 2, 10.

⁵² Lucan, *Pharsalia*, x, 26.

⁵³ Ovid, *Metamorph.*, vi, 622; *Fasti*, v, 403.

⁵⁴ Pausanias, vi, 2, 10; Pausanias, vi, 37, 4.

⁵⁵ Ovid, *Fasti*, vi, 622; Pausanias, vi, 37, 4. Ovid also states that Chiron, and various other centaurs, were the sons of Cronos, and that it was Cronos who gave them their names. (Ovid, *Fasti*, vi, 622.) Pausanias states the number of centaurs as twenty-seven. (Pausanias, vi, 2, 10.)

by Fulvius (4th cent., B.C.) and by Aratus (3rd cent., B.C.).

⁵⁶ Plutarch, *Quæstiones Conviviales*, iii, 1, 3.

⁵⁷ Pliny, *Nat. Hist.*, xxv, 11-14. These four plants have been identified respectively with *Polemonium tenuiflorum*, L.; *Asclepias chironia*, L.; *Hypericum olympicum*, L.; and *Centaurium erythraium*, L.

⁵⁸ Pliny, *Nat. Hist.*, xxv, 16; xxvi, 17.

⁵⁹ Pausanias, vi, 26.

to be Apuleius Platonius Madaurensis, but sometimes he is called Apuleius Barbarus or Pseudo-Apuleius. The latter designations are modern and serve to distinguish the author of the herbal from that of Lucius Apuleius, the Platonic philosopher and rhetorician who was born in Numidia in the year 125 A.D. But by whatever name he may be called, the actual author or compiler of the *Herbarius* is unknown to us; there is internal evidence that the work is a translation or adaptation of a Greek prototype, but no Greek manuscript of it is known, unless, as seems probable, the fragmentary *Johnson Papyrus*, a single folio from a papyrus codex written about 400 A.D., is the sole surviving relic of a Greek original.⁶⁰ The latest critical edition of the Latin text is that of Howald and Sigerist, published in 1927.⁶¹ The Latin version of the *Herbarius* was probably compiled in the fourth century A.D., but no manuscript of it is known of earlier date than the seventh. It was translated into Anglo-Saxon in the twelfth century⁶² and it long retained its popularity in northern Europe. Most of the extant manuscripts ascribe the book to Chiron the Centaur and those that are illuminated have a picture of him. The title reads as follows:

Herbarius Apulei Platonici quem accepit a Chirone Centauro, magistro Achillis, et ab Aesculapio.⁶³

In the Anglo-Saxon manuscript in the British Museum the volume opens with a large and beautifully illuminated picture in which, according to some interpreters, Plato hands the book to Asclepius and Chiron. The central figure, in Saxon costume, holds the volume, bound in red leather: on his right is Asclepius, a bearded man in Greek costume, and on his left stands Chiron in his traditional guise—i.e., a bearded man with human head, arms and torso attached to the body and legs of a bay horse. The three figures have their names written below them: the central figure is labelled Plato, and the other two Escolapivs and Centavrvs respectively. It seems to me more probable that in writing "Plato" beneath the central figure, the scribe was deceived by the title of the book—"Herbarium Apulei Platonici." The title states quite specifically that Apuleius received the book from Asclepius and Chiron, and it seems more probable that the picture is

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Especially associated with Chiron is a particular herb, three kinds of which are described in Chapters X, XI and XII of the *Herbarius*. This is the *Artemisia*, a plant well known by its vernacular name Mugwort. Of these three kinds it is said:

Nam has tres artemisias Diana dicitur invenisse et virtutes earum et medicamina Cironi centauro tradidit, qui primum de his herbis medicinam instituit. Has autem herbas ex nomine Dianae, hoc est artemisiam nuncupavit.⁶⁴

In many of the manuscripts there is a picture of Chiron receiving the plant from Artemis (Diana). The herb has enjoyed a reputation from very early times and has an elaborate story of its own, which cannot be dealt with here.

Finally it may be mentioned that the name of Chiron has an association with veterinary medicine. Suidas⁶⁵ says that a book on the veterinary art was composed by Chiron, and tradition accordingly associated his name with a later work of the Middle Ages known as the *Mulomedicina Chironis* of which several manuscripts are known.⁶⁶

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"The Bewitchment of the Infinitely Small"

Spain's Greatest Scientist Begins a Lifetime of
Research in the Minute Anatomy of the Nervous System*

DOROTHY F. CANNON†

BY the year 1884 when Santiago Ramón y Cajal, now thirty-two years old, transferred to his new position at Valencia he had won the reputation of being a hard-working, earnest investigator. Upon moving to Valencia in January, he and his family took temporary lodgings in a hotel on the Market Square near the old Silk Exchange, one of the last remaining examples of Spanish medieval civic architecture. When they had succeeded in finding a suitable house and in buying the new furniture they needed for it, they went to live in a simple dwelling in the Calle de las Avellanas, where a few days later a second daughter, Paula, was born. Cajal was now the father of three children. The two eldest were a girl and a boy, Fé and Santiago.

Cajal was charmed with Valencia and spent a few days before becoming immersed in his work in exploring the romantic old city. He visited the ancient cathedral and climbed its tower, the Miguelete. He filled his eyes with the deep green-blue of the Mediterranean. He made excursions to the picturesque suburbs and the enchanting little towns near by. He wandered about the seaport, the popular promenade, and the ruins of the Roman theater at Sagunto.

He soon made friends with his colleagues at the university and found them to be an excellent group of men. This is how one of them describes him in the early days in Valencia:

In 1884 a young professor who had just won by competitive examination the chair of anatomy at the university, appeared among us. It was Cajal. His somewhat neglected person had a dry, angular, rugged look about it. If this made him seem a bit uncouth, it was at once redeemed by his noble head. His forehead was broad and was made still broader by incipient baldness, by the slight depressions at his temples, and his fine, straight nose. These gave him the stamp of intellect and distinction. His black eyes were remarkable too, their gaze dreamy when deep thought seemed to draw them back into his head, yet keen and penetrating when focused upon something in rapt attention. . . . In spite of his blunt frankness and his temperament, which was more inclined toward seriousness than laughter, he quickly adapted himself to the gay atmosphere of the city and he soon gained the respect of both faculty and students by his learning. He won my friendship at once and shortly gave me his.

* A chapter from the recently published biography of Cajal, *Explorer of the human brain*, New York, Henry Schuman, Inc., 1949.

† Philadelphia, Pa.

In order not to become too one-sided in his almost fanatical absorption in microscopy, Cajal joined a social club, the Casino de la Agricultura, where he moved in a circle of agreeable and distinguished people. He became an ardent chess player, his only "vice." He joined a scientific and literary society, too, and there met some of the outstanding intellectuals of Spain. These were his sole extravagances, and he felt they were justified in that they saved him from the gaucherie and mental lopsidedness that characterize so many scientists who devote their time and energies to specialization in such restricted fields as he now contemplated for himself.

His home was modest, for to him a balanced budget was a strict necessity. Without it, he realized, neither domestic peace is possible, nor that tranquillity of spirit so indispensable to prolonged research without expectation of monetary returns. His house had a large room well suited to become his new laboratory, and it was soon full of activity. A busy laboratory, he found out, is about as expensive as a rapidly growing family—and he now had both, so he was well qualified to judge. To supplement his professorial salary, he chose to do outside teaching rather than to resort to medical practice, which would leave him scant leisure for the research work now occupying the center of his thoughts. From the first he was very successful in his teaching, and he soon organized a course in normal and pathological histology. His lectures were attended by several physicians working for the doctorate and by others already in practice who wished to extend their knowledge, particularly in the new science of bacteriology, which was now rapidly winning a place for itself as a result of the brilliant work of Pasteur and Koch.

The additional income he earned in this way put his laboratory on a soundly functioning financial basis, and even enabled him to buy some new equipment that he badly needed, such as an automatic microtome. Because he was miserably poor, he used small animals, chiefly mice, for his experiments and would put a dozen different specimens on a slide. His choice of the mouse, one of the smallest mammals, made it possible for him to follow through all the structures of the brain in a relatively small number of sections. And because the nuclei of the cells were close together, he could see the nerve processes extending all the way to their destinations. In this manner he was able to observe the whole architecture of this mammal's brain more completely than it had ever been done before.

Though he was managing by extracurricular work and rigid economy to put his home laboratory on a fairly efficient basis, his facilities for teaching anatomy at the university remained meager. He pleaded with the Min-

ister of Education to make it financially possible for the university to get better equipment for its students, promising that if this were done, he would see to it that their original work in his department would win a place comparable with that held by the university laboratories of France and Germany. "It is a disgrace," he said, "that among the many thousands of discoveries there is not one to which the name of a Spaniard is attached."

A little help was given, and Cajal kept his promise. Within the next few years, a series of articles on various aspects of brain anatomy issuing from Valencia began to attract the attention of the medical world. The new discoveries hinted at in these early publications were so different from the views generally held with reference to the intimate construction of the brain substance that they were largely discredited. Perhaps remembering this experience and many like it that came to him in later years, Cajal would write in his *Charlas de Café* (*Conversations at the Café*) with a touch of bitterness: "To be right before the right time is heresy, sometimes to be paid for with martyrdom." The more vigorous champions of the old concepts questioned the accuracy of his observations; the more open-minded were still to be convinced. Yet in less than ten years Cajal's discoveries would become an essential part of all histological knowledge of the nervous system.

THE CHOLERA EPIDEMIC OF 1885

Cajal's scientific progress was suddenly interrupted in 1885 by the cholera epidemic that raged that year in Valencia and later throughout all Spain. Although Robert Koch had recently discovered the comma bacillus to be the cause of cholera, this knowledge had as yet been put to little use. Microbiology was then only in its birth throes but it was already stirring up widespread interest and enthusiasm. Many of the older histologists were deserting their earlier specialty to devote their energies to the virgin territory opened up by the study of pathogenic bacteria and the ways by which these microscopic organisms cause infection, illness, and death in men and animals. Cajal, too, was momentarily attracted to it.

For years afterward, the horror of the cholera epidemic remained vividly in his memory. The hospitals were bursting with victims; in Cajal's own street there were several cholera deaths, though fortunately his own family escaped unscathed. There was bitter controversy among the doctors: those loyal to the teachings of the old school held that the cause of the disease was the mist of the night air and administered laudanum, as advocated in the

seventeenth century by Sydenham; those of the new school, mostly younger men, recommended boiling the drinking water and taking no food that had not been thoroughly cooked. It was by following these simple precautions that Cajal's family preserved its immunity, in spite of the fact that his laboratory was full of cultures of cholera in gelatin and broths. When the epidemic was at its height, his fourth child, Jorge, was born, on July 2, 1885.

At just this moment the eminent Dr. Ferrán came to Valencia, preaching the new gospel of the anticholera vaccine. After several experiments on guinea pigs and several in which he had heroically inoculated himself, he was convinced that he had found a culture of the disease which, when injected into a man, would immunize him against the microbe if it should enter his body through his mouth. The medical profession heatedly debated the subject of the new vaccine and as usual was divided into two opposing camps of old and young, of conservatives and progressives. The older men declared the vaccine to be a gross scientific error, if not an out-and-out money-making quack remedy. But the devotees of Dr. Ferrán were not to be put aside. They organized a society for the purpose of spreading information about the use of the vaccine, of manufacturing it on a large scale, and of obtaining from the Government permission to immunize all the people living in the districts in which the epidemic was raging. Cajal was urged to become a member of the society. But he was not absolutely sure of the efficacy of the vaccine and wished to remain open-minded and free from any taint of mercenary motives, so he did not join it. Still, since he was a resident of Valencia and busy with work in microscopy, the provincial government of Zaragoza appointed him, together with Dr. Lite, the official delegate, to study both the disease itself and the proposed preventive measure and to prepare a statement on the subject.

Cajal threw himself into this task and in July, 1885, he traveled to Zaragoza to give his report. By this time the epidemic had spread throughout almost the whole of Spain. He confirmed the theory, then still disputed, that the disease really was cholera and stated that in all probability it was due to the comma bacillus of Koch. But he was not inclined to put much faith in the anticholera vaccine prepared by Dr. Ferrán. He felt that its effectiveness had not yet been proved and that further study was needed before such a potentially dangerous culture should be widely administered in vaccine form.

By the end of September, Cajal had completed work on a large monograph prepared at the request of the provincial government of Zaragoza—*Studies on the Red Microbe of Cholera and Prophylactic Inoculation*. In

spite of the fact that such a work would necessarily be chiefly a summary of information on the subject to date, with a careful evaluation and interpretation of the known facts, Cajal's report did contain some original conclusions based on his own experiments. One was a new, practical, and simple method for staining the comma bacillus so that it could be seen clearly when placed under the microscope. The most important contribution he made was his demonstration that hypodermic injection of a certain quantity of cholera culture that has been killed by heat stimulates the formation of antibodies and thus might possibly produce an immunity to the disease. This discovery—that vaccination of man and animals with *dead* cultures may produce immunity—has been almost universally attributed to two American bacteriologists, D. E. Salmon and Theobald Smith, who in 1886 published their treatise, *On a Method of Producing Immunity from Contagious Diseases*. The honor should go to Cajal, however, since he had demonstrated the same thing in this government report a year earlier.

Certain other points brought out in the report were of importance and were later confirmed by eminent bacteriologists. One of these was the doubt Cajal expressed (later corroborated by Metchnikoff of the Pasteur Institute) that mere inoculation beneath a man's skin with a pure, live culture of bacilli cannot in itself immunize the digestive tube. This doubt was based on the fact that such a culture cannot migrate to the intestines and therefore cannot produce the symptoms of cholera, which is localized solely in the intestinal tract.

As was long to be the case with the work of Cajal, these original contributions passed unnoticed by the men of science of his day. Yet the effort he expended in preparing his elaborate monograph on cholera did not go entirely unrewarded. The provincial government of Zaragoza conferred upon him for his zeal a magnificent Zeiss microscope. His heart bounded with joy at this unlooked-for gift. Nothing could have pleased him better or been more directly useful to the career he was already carving out with firm, deliberate strokes.

His excursion into the study of the comma bacillus awoke in him a profound interest in bacteriology and pathology and he often wondered in later years if it would not have been more fruitful for him, both mentally and financially, if he had followed this path, which was then so fashionable. Histology condemned him to poverty; its greatest reward would be the grudging praise of the few scholars who could understand and appreciate his work. Bacteriology, on the other hand, was unworked soil, full of rich

surprises, inexhaustible in discoveries leading to the relief of suffering and to popular acclaim and honor as one of the mercy-bearers of mankind.

But knowing his own nature, Cajal chose histology, the cautious way but also the tranquil way.

I knew well that I should never be able to drive through such a narrow path in a luxurious carriage; but I should be happy in contemplating the captivating spectacle of minute life in my forgotten corner and listening, enraptured, from the eyepiece of the microscope, to the hum of the restless beehive which we all have within us.

A more practical consideration influenced him too—the expensiveness of work in bacteriology as compared with the relative inexpensiveness of histology. He envisioned the vast hordes of experimental animals the investigator in pathology would have to buy, feed, and care for, the costly and varied laboratory equipment, the sterilizing ovens, the incubators! For histology one needs only a good microscope and a few standard reagents. So Cajal—now father of four children, earning fifty-two dollars a month—bade farewell, as he puts it, to the alluring microbe and remained faithful to his first love, the cell.

THE REGENCY

Some weeks after Cajal's return to Valencia in October of the terrible cholera year, the king of Spain, Alfonso XII, died after a brief illness—bronchitis—an illness so brief that it had hardly been announced before he was already dead. The value of the peseta fell, and the royal household looked forward with dread to the revolution all felt was sure to follow. To avert this danger, Alfonso's minister, Cánovas, astutely turned over the government to the Liberal Sagasta, who by his appeasement policy staved off revolutionary outbursts. María Cristina of Hapsburg, wife of the dead king (his grandmother of the same name had died a year before Alfonso's second marriage), now became regent of Spain. According to the Constitution, her eldest daughter should have become queen, but María Cristina was pregnant, and in the hope that Alfonso's posthumous child would be a boy, she wanted no steps to be taken in this direction until after the birth of the new baby.

Early in May, 1886, a hurricane swept Madrid, causing great damage to property and widespread suffering. María Cristina, though the time for her confinement was drawing very near, spent her days going about the city giving alms to the destitute and visiting the hospitals, thronged to the doors

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an extensive work on histology and microscopic technique, *Manual de histología normal y técnica micrográfica*, the first installment of which had appeared in May, 1884. The next two years were devoted unstintingly to this monumental treatise, which when completed comprised 692 pages of small print and 303 woodcuts made from drawings of Cajal's anatomical preparations by an artist of Valencia. This work was to prove a financial success. (To his amazement, the first edition was sold out and a second edition had to be printed in 1893.) Cajal's motives in undertaking it were fully realized. He gathered together into one volume all his original observations in the field, minor discoveries that had gone practically unnoticed. He disciplined his researches by making them fit into the rigid program demanded by a project of this sort. And, most of all, he satisfied his patriotic wish to show foreign scientists that something original and worth while could come out of Spain, something personal, based on accurate, direct investigation and not a feeble reflection of the scientific productions of other lands.

In these same years, while writing his treatise, which shortly was to become world-famous, he composed a series of popular-science articles for *La ciencia*, a weekly paper published in Zaragoza. These articles were fanciful, lyrical, with imaginative sweep; they gave release, in the midst of his more serious work, to the smothered romanticist in him. They were signed "Doctor Bacteria," the pseudonym he was always afterward to use for his writings in science for the layman. These minor pieces served an important purpose: they showed how fascinating the study of cells and microbes can be and how rewarding, not only in personal terms, but in the contributions to be derived from this practically unknown field for the betterment and enrichment of everyday life. They breathed confidence and a robust faith in the certainty of scientific advance in the years to come. They showed at its full the author's passionate eagerness to probe the mysteries of living things and his exhilaration each time his curiosity gained some slight advantage in its struggle with recalcitrant Nature.

These scientific-literary writings reveal Cajal the man more abundantly than do his more technical works, in which Cajal the master scientist dominates the picture. Here is some of the magic the eye of the microscope unveils, as he describes it:

. . . the wandering white blood cell, opening a breach in the bloodvessel wall and deserting the blood for the surrounding territory, like a prisoner who files through the grating of his cell; the region of the trachea and the larynx, sown with vibrating hairs, which wave, in response to hidden stimuli, like a field of grain before the wintry wind; the tireless lashing of the sperm cell as it hastens breathlessly toward the egg, the lodestone of its love; the nerve cell, the aristocrat among the structures of the body, with its

poses he may be unable to see, or to hear, or to speak. All feeling or power may disappear from one or more limbs. The development of such conversion symptoms reduces the overwhelming anxiety previously felt. It should be emphasized that such casualties are not "faking" (malingering). They are completely unaware that no physical basis for their symptoms exists, and they are just as disabled as though they had a physical injury.

The disaster reactions described above have been separated into five categories largely for the sake of clarity and because, to some degree, individuals in each group obviously must be treated differently when encountered. Actually one disaster victim may show some features of more than one category simultaneously or at successive stages of his reaction. For example, the initially numbed, depressed victim may later swing spontaneously into excessive activity and great distractibility. These variations need not be too troublesome in psychological first aid, however, since your chief job will be to deal with the casualty as you find him and for only a relatively short period of time thereafter.

FOUR BASIC PRINCIPLES

To be of maximum service to an emotionally disturbed person, certain general principles must be reasonably understood and believed. A brief discussion of them follows.

Accept Every Person's Right to Have His Own Feelings—Do not blame or ridicule a person for feeling as he does. Your job is to help him cope with his feelings—not to tell him how he *should* feel. If you stop to think of your own feelings, you will realize how impossible it is for human beings to make a conscious choice of their deeper feelings. Our freedom of conscious choice—and hence our responsibility—depends upon what we *do* about our feelings to relieve the tensions they create within us. After we have taken appropriate action, the initial feelings may change, sometimes quickly, sometimes gradually. Nothing is gained by trying to deny that the initial feelings existed just because they were at variance with what we now think a self-respecting human being *should* feel.

Keep in mind that however similar another person's background may be to your own, each person has had certain unique experiences which can strongly affect his feelings in relation to subsequent events in his life. Thus disaster will have many meanings to the many victims. Above and beyond the horror and fear which all may properly feel, the person will react in terms of how this experience fits in with his past ideas about himself and his aspirations for the future, as well as the world in which he has lived and expects to live.

All of us have failed in some things we have tried to do and have succeeded in others. Being human, we have not always really understood just why we have failed or succeeded. Hence we have looked about us and within ourselves for understandable "reasons" for these failures and successes. It is a rare person who can accurately identify the causes and motivations of actions in which he is involved or his own motivations concerning them. The average person tends to give more blame or credit

than he should to himself, to others, or to chance. It is the rule rather than the exception that people are either more proud or more ashamed of courses of conduct than the actual facts entitle them to be. When disaster strikes, many will be inclined to suspect, at least, that their past mistakes account in some way for their being among the victims.

A poignant example of this trait has been reported from Nagasaki, where the second atomic bomb attack was so devastating. A little boy had been caught beneath a fallen beam and could not free himself because a spike pressed on his chest. He later recalled the first thoughts he had about the *meaning* of the experience to him. He was *sure* the spike on his chest was a direct punishment, designed specially for him, because he had collected butterflies and pinned them to a board!

In giving psychological first aid, you will seldom be exactly sure *why* some persons become more disturbed than others about them. Years of research and analysis may sometimes fail to explain fully *why* a person feels as he does. Fortunately, it is infinitely easier to determine *how* he feels at a given moment. His expression, his posture, his whole manner can tell you this, even though he says nothing with words. Letting a casualty know you want to understand *how* he feels can be the first step toward helping him. This may be done with a few words or even a simple gesture. Do not overwhelm him with pity. This will only make him feel more inadequate and will confirm his worst fears about himself. Just do enough to establish such contact as you can with him. If he senses even vaguely that you are trying to see this disaster through his eyes, your chances of helping him find constructive outlets for his distressed feelings will be greatly increased. It is the collapse of *his* world that distresses him. He will not trust you very far if you deny his world by telling him he has no need to feel the way he *knows* he feels.

Accept a Casualty's Limitations as Real—When a man's thigh is shattered, no one (including the patient) expects him to walk for a time. When a man's ability to cope with his feelings is shattered, many (often including the patient) are inclined to expect him to function normally again almost immediately. "It's all in your head." "Snap out of it." "Pull yourself together." Such goading, scolding types of "reassurance" have no place in psychological first aid. The casualties you meet will not *want* to feel as they do. They will want to be as effective as possible, but their feelings of incompetence or overconfidence are real and often disabling. It will be your job to help them regain as much effectiveness as they can as rapidly as they can. This is best done by accepting the handicaps they present, and by helping them rediscover quickly a few of their assets which they can use at once.

In doing this, you must at all costs guard against a very common human tendency in yourself. Especially when you are as fatigued and as frustrated as you may well be in the midst of a disaster, you can easily begin to resent intangible disabilities in those around you. Physical wounds you can see. Anxiety in others is harder to rec-

ognize After all, you will feel, you have managed to get yourself passably well reorganized Why cannot others? Why do they need your help to do for themselves what you believe you have managed independently for yourself? Again you need to recall that the same experience can have vastly different meanings for different people Even though you may be able to restore some semblance of order in your private world fairly rapidly after a disaster, others may well find the job far more complicated They deserve your understanding help—not your resentment—in response to their very real needs

Size up a Casualty's Potentialities as Accurately and as Quickly as Possible —While you are making allowance for a disturbed person's limitations, you should be on the lookout for skills and other assets you can revive and utilize A very upset person can easily cause you to forget that he *could* be of real assistance to you as well as to himself, if you can help him get started on the way toward reorganizing his world Inquire gently into what happened to him Let him reply in his own way You cannot let him ramble on endlessly, but even a couple of minutes in which he can talk freely of his own experiences will relieve remarkably some of his feelings of despair and helplessness Find out if a casualty is particularly concerned about family or friends Give him as honest an estimate as you can of where, when, and how he may reasonably expect to make contact with those who are dear to him If he is too depressed to talk easily, some statement of what *may* have happened to him (based on your general knowledge of the disaster) can increase his confidence in you to the point where he can talk a bit

Brief questions about his normal occupation may give you some clues to his interests and basic abilities For example, a man with manual skills can be asked to help you straighten up the immediate area where you are trying to do your job A man with some clerical background may be of great assistance in simple jobs involving messages or records For many persons who have been overwhelmed emotionally, work which can be done almost automatically and by rote can be the first step back toward normal effectiveness

It is surprising how close you can get to a person under disaster conditions in a short time Be warmly interested but not enveloping or maudlin Treat him as a potentially valued member of your disaster team Show your respect for him as sincerely as you can Help him to find a way to utilize his skills as quickly as possible

Accept Your Own Limitations in a Relief Role — Do not try to be all things to all people There will be much you would like to do in a disaster beyond your strength and skill You cannot be all things to all victims Consequently, you must establish a set of priorities in your thinking about what you will allow yourself to undertake Your first responsibility will be to whatever emergency job you have previously been assigned In theory, this may well be a full time job, but in practice, you will be under pressure to do some of the jobs assigned to others who may themselves be casualties Here you must know yourself quite well to judge accurately what would be worth

your trying and what would be a total waste of time You will naturally extend yourself to the limits of your capacities Be as sure as possible that you do not push yourself beyond those limits, lest you become as ill as those who need your help

A reasonably candid appraisal of yourself is a very important part of your preparation for psychological first aid. A physically injured first-aid worker may continue to do a good job of dressing the wounds of other casualties But if you are emotionally "wounded" yourself, you will be greatly handicapped in providing help for others with emotional difficulties In other words, know your own weaknesses well enough to handle them quickly in time of crisis

It should be clearly understood that in a community-wide disaster you yourself could be as subject to personal anxieties as less formally trained workers Your training should prepare you to handle your own emotional problems first—and promptly For example, your natural concern about the plight of your own family and friends should be anticipated so consciously and fully that you will not find yourself suddenly and unexpectedly bogged down by these concerns when disaster strikes If you have done your best in advance to provide protection for your family, your feeling of personal responsibility for them will be less (See "HOME PROTECTION EXERCISES—A Family Action Program," published by the Federal Civil Defense Administration) During training, your annoyances at imperfections in the disaster plans should be worked through fully enough so that in time of crises you do not find yourself overwhelmed by a flood of resentment at "the authorities" because they have not given you everything you feel you should have had to help relieve suffering

You should examine carefully certain trends in your own "normal" behavior Are you impulsive? Are you easily angered? Are you a bit more sensitive to criticism than the average person? Are you inclined to store up resentments instead of expressing them wisely and effectively? Do you tend to judge people according to their race, religion, or other group affiliation instead of as people? Are you prone to make promises beyond your actual strength and capacities because you cannot bear to say "No"? None of these characteristics may have caused you any serious grief thus far In the midst of a disaster, any one of them could trip you up badly if you are so unaware of their presence that you have never developed any ways of modifying them

The training you receive as a disaster worker will in itself protect you somewhat in time of stress Experience in real disasters, such as fires, floods, and tornadoes, will make the value of your training much more significant to you Knowing how to do an important job well is a widely recognized antidote for many types of anxiety

Nevertheless, regardless of how thoroughly you are trained, it would be unwise to assume that you will be completely immune to all personal disturbance if the community you know should be torn apart suddenly by some tragedy such as an atomic explosion Hence your first job in psychological first aid is to look to your own defenses If you understand yourself reasonably well,

you may justifiably hope to endure and control your own anxieties in the midst of a community-wide disaster

Summary—To sum up, the basic principles of psychological first aid concern ways of establishing effective human contacts with disturbed, overwhelmed persons who have lost touch to some degree with the world as it is. Once such contacts are made, it becomes reasonably easy to help many of these people to take an active, contributory part in the simpler phases of emergency activities. Devastating as a catastrophe may be, the very needs it creates can be an asset to psychological first aid. Unlike ordinary life, a disaster engenders more urgent jobs than there are people to do them. Opportunities to regain self-respect and self-confidence are correspondingly greater. Psychological first aid can help many emotionally disturbed victims to take advantage of these opportunities and thereby get back into their stride.

SOME PRACTICAL SUGGESTIONS

Your successful application of these general principles requires practice. Just as you need active disaster experience to learn more about yourself when you are under stress, so such experience is the only means by which you can really learn the value of the principles that have been discussed. Nevertheless, some examples of how these ideas may be applied to the chief categories of reactions previously described should be mentioned.

Normal Reactions to Disaster—Obviously little or no help from you is required by the persons who remain calm and effective in the face of emergency, even though they may experience rather transient symptoms, such as nausea, sweating, or other normal reactions to stress. A word of sympathy and encouragement in passing can be well worth while, but it will be important (as well as necessary!) for you to assume immediately after the impact of a disaster that *most* of the surviving casualties can regain at least some control of their emotions if given a little time to do so. The course of the reactions will soon make it clear which persons are becoming actually disabled by their disturbed feelings and which are having reasonable success in overcoming their initial internal turmoil. Subsequent events may alter the situation in particular people, but a good general rule to follow is that psychological first aid is necessary only for those persons who are manifestly losing control of themselves or are making no perceptible progress toward resumption of effective behavior.

Individual Panic (Blind Flight)—These cases will respond least to the application of the general principles that have been presented. Physically, these individuals will be so explosive in their behavior that you will have difficulty even in getting their attention. They will be disturbing to all about them, and they may very easily provide the nucleus for development of a general panic. Consequently, their early segregation and control is urgent. How you can attain these ends will depend largely on the facilities available to you. Gentle firmness should be tried first, but if this fails, get two or three others to help you take these casualties to the nearest medical aid station you can find in operation. Should you attempt this forcefully by yourself, the casualty will almost certainly break away from you and become even more disturbed.

If you find yourself isolated for any great length of time from all medical facilities, it would be wise to ask two or three fellow workers to remain with the person in panic until help arrives. In such an arrangement, physical restraint may have to be used for a time, this restraint should be firm but not brutal or punitive. The widespread belief that a casualty in panic can be jolted out of his confusion by slapping him in the face, by dousing him with cold water, or by other forms of abuse is unsound. Such tactics may interrupt the disorganized behavior, at least briefly. But in the midst of disaster tensions, striking a disturbed casualty will not only fail as a rule to control his panic but will greatly increase the anxiety of those around you who may feel on the verge of similar panic themselves.

With regard to your being justified in restricting two or three people to the temporary care of a single casualty, it should be emphasized that panic spreads easily. The prompt control of people who are becoming panicky will go far to offset the great dangers inherent in the development of such behavior in large numbers of people.

Depressed Reactions (Slowed Down, Numbed)—It is with these persons that you may hope to get the best results by the methods which have been suggested in this manual. A relatively short time spent with each of them, or even with a number of them gathered in a small group, will bring out desirable responses in many. As they sense your constructive interest, their private worlds no longer seem quite so desolate to them, and your individualized suggestions for simple, routine jobs they might undertake will have a chance of making a useful impression. Some will naturally respond more quickly than others, and your own limitations in time and energy will obviously prevent your working very long consecutively with any one of them. Nevertheless, if you can help even a few of them to begin functioning again, others will tend to rouse themselves and will be more amenable to suggestions when you can spare a few moments for them. A casualty may at first show no sign of response to you. Yet he will be forming at least vague opinions of you as a person, and his later reactions to you will reflect the quality of his initial impressions.

Elderly people and children who are victims of a disaster present many special problems. This is not the place to discuss the long-term phases of these problems. From the standpoint of psychological first aid, however, the methods just described will be reasonably effective with both the aged and the very young casualties. Older persons will tend to become more confused in a disaster than the young or middle aged, and hence cannot be expected to respond to understanding care as quickly or as well the younger group. The reaction of children, on the other hand, will often reflect the attitudes of the adults around them, and calm, realistic assurances will go far toward helping them recover some equanimity. It is obvious that both the aged and the children should be given as much quiet supervision as possible during the chaotic period immediately following a disaster.

Overly-Active Responses—Here again, as with the panicky persons, you may at first have trouble just getting the attention of the overly-active group. Unlike the pan-

icky persons, however, they will establish a flighty sort of contact with you which will give you some opportunity to indicate your interest in helping them become useful. Under proper supervision, which will compensate somewhat for their great distractibility, these persons can gradually attain a reasonable degree of composure. Their need for physical activity will be considerable, so that jobs such as moving rubble or rescuing casualties would have value for them.

Since these persons feel much confidence in themselves, they may cause serious trouble. They will be inclined to criticize what they regard as the stupidity of authority in general, and may well be outspoken in their resentment of some person or group whom they blame for the disaster. Like panic, such "scape-goating" attitudes are extremely contagious in disturbed situations. If they are allowed to spread, they can lead to a very serious crisis.

Hence every effort should be made to dissuade them from destructive expressions for the moment and to encourage them to devote their excessive energies to cleaning up the mess at hand. There is no need to argue the rightness or wrongness of their views, there may even be some actual basis for their resentment. It is far more important to make clear to them, as diplomatically as you can, that once a disaster has occurred the urgent need is for such repair of the damage as may be possible. Responsibility for the disaster can be considered later.

Bodily Reactions—You should not find it difficult to talk calmly with this type of casualty. It will probably be impossible for you to relieve them of their bodily disturbances immediately, whether they be of the type represented by nausea, vomiting, or weakness, or of the type represented by hysterical blindness, deafness, or paralysis. It is important, however, to make them feel your interest in them as individuals. You may then be able to find a number of small jobs which they can do in spite of their symptoms. By thus by-passing their disability to some degree, you may help a number of them to regain their composure gradually, while waiting for medical help.

SEDATIVES—A LAST RESORT

Do *not* administer sedatives to psychological casualties except as a *last resort*, and even then consult a physician, if possible, before you do so. The psychological casualty does not think clearly. However calming a sedative may be, it will inevitably add to his confusion and make him even more inaccessible to the methods of treatment which have been described.

You may wonder whether in some instances, such as a wildly panicky reaction, it would not be simpler and better to put the casualty to sleep with a sedative until medical help arrives. Unfortunately, so seriously disorganized a person usually requires very large and dangerous doses of sedatives to be put to sleep. It is not uncommon to see a paradoxical response in which a disturbed person becomes even more excited when given large doses of a drug which usually has a sedative effect. Consequently it is far better to rely on the approaches already discussed in attempting to help the casualty with

emotional disabilities. Should you be forced to use sedation, make doubly sure that the casualty is clearly tagged with a record of any medicine you have given him and of the time it was given. Otherwise, if he is still disturbed, you or someone else may later give him more sedation that could be fatal in combination with the first dose.

IF YOUR BEST EFFORTS FAIL

The problem remains of dealing with those disturbed casualties who continue unresponsive to your best efforts. It has already been pointed out that the actually panicky casualties may need to be brought under trained medical care as promptly as possible. The depressed and those with severe bodily reactions who you cannot reach are less urgent cases. They may be handled in groups, temporarily, in first-aid stations, mass care centers, or in improvised hospitals. They should also be brought under medical care as soon as possible. While they are waiting, their physical needs (warmth, food, protection from further danger) should be met. Those in the overly active (not panicky) group, who will pay no attention to you, may have to be tolerated until their dashing about seriously disrupts the work of others. It may then be possible to persuade them to join those awaiting medical attention on the grounds that they are overworking themselves and seem to be in danger of collapsing. If this face saving approach fails, more drastic measures, similar to those recommended for control of panicky people, may have to be used.

MASS PANIC

Chief consideration has been given in this manual to the recognition and care of emotional problems in *individual* disaster victims. The emotional disturbances of large crowds may also become a serious burden in any disaster. Although the forces involved in these group reactions are related to the forces in the disturbed individuals, the handling of them requires controls and techniques of leadership beyond the measures for dealing with individuals discussed here.

Nevertheless, as you learn and apply the principles of sound psychological first aid, you will contribute tremendously to the prevention of crowd activity which, should it get under way, may easily become impossible to control by the most effective leaders. Your success in restricting the influence of one panicky person may very well be the chief reason why his less disturbed associates turn to constructive activity instead of rushing off blindly to their own destruction. Deft control of a single overly-active, resentful person who seems bent on punishing the scapegoats he holds responsible for a disaster, can do more to avoid the horrible results of riots than all the efforts of troops or police who might have to quell a mob determined to vent their anger on some official or on some minority group.

Community leaders, as well as military and police personnel, have quite enough to do during any disaster without having to exhaust themselves in efforts to control disorganized mob activity. With the proper use of psychological first aid, you can do much to spare them this additional burden.

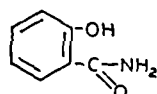
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in *New and Nonofficial Remedies*. A copy of the rules on which the Council bases its action will be sent on application.

R T STORMONT, M D , Secretary

Salicylamide—C-H-NO₂—M W 137.13—The structural formula of salicylamide may be represented as follows:



Actions and Uses—Salicylamide, the amide of salicylic acid, shares the actions and uses of acetylsalicylic acid (aspirin). Its analgesic potency is no greater and may be somewhat less than that of aspirin. Its antipyretic and anti-inflammatory or anti-arthritis properties are not superior to those of aspirin. The over-all incidence of gastric intolerance to salicylamide is about the same as, or a little less than, that to aspirin, however, patients allergic to aspirin have been reported not to be sensitive to salicylamide. It can be used safely in place of salicylates whenever such medication is indicated.

Salicylamide is readily absorbed from the gastrointestinal tract, but does not produce high salicylate levels in the serum. It is diffused widely throughout the tissues, excreted chiefly by the kidneys, and apparently is not destroyed appreciably in the body. Since the toxicity of salicylamide compares closely with other salicylates, it should be employed with the same general precautions. The possibility of the development of sensitivity to salicylamide after its repeated use, particularly in patients already allergic to other salicylic acid compounds, should be kept in mind.

Dosage—Salicylamide is administered orally, preferably after meals and with fluids to minimize gastric irritation. The dosage should not be less than that for aspirin. As a simple analgesic or antipyretic, single doses of 0.3 to 1 gm three times daily may be adequate, as an antirheumatic agent, doses of 2 to 4 gm three times daily (or 1 to 2 gm every four hours) may be prescribed, according to gastric tolerance, over periods of three to six days. For children, correspondingly smaller doses should be employed.

Tests and Standards—

Physical Properties Salicylamide is a white, almost odorless, crystalline solid, m.p. 139–142°. It is freely soluble in alkalis. The approximate amounts that dissolve at 25° in the following solvents to form 100 ml of solution are: 7 gm in alcohol, 1 gm in chloroform, 3 gm in ether, 5 gm in propylene glycol, and 0.2 gm in water. Salicylamide is fairly stable to heat, moisture, and light.

Identity Tests Dissolve about 0.1 gm of salicylamide in about 5 ml of alcohol and add a few drops of ferric chloride T.S. A violet color develops (presence of a phenol).

Dissolve about 0.2 gm of salicylamide in 5 ml of alcohol, and add 15 ml of water. To this solution add slowly and with shaking, bromine T.S. until a yellow color persists. Allow the mixture to stand at room temperature with occasional shaking for 30 minutes, collect the precipitate, wash with water, recrystallize from aqueous alcohol, and dry in a vacuum over phosphorus pentoxide for 4 hours. The compound melts at 183–185°.

A 0.001% solution prepared as directed in the spectrophotometric assay for salicylamide exhibits ultraviolet absorption maxima at about 236 and 302 mμ [specific absorbancy E(1% 1 cm) about 302 and 548] and minima at about 224 and 263 mμ. The ratio of the absorbancies at 236 and 302 mμ is 1.77–1.87.

Purity Tests Dry about 1 gm of salicylamide, accurately weighed, at 105° for 4 hours. The loss in weight does not exceed 0.5%.

Char about 1 gm of salicylamide, accurately weighed, cool the residue, add 1 ml of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh the residue; does not exceed 0.05%. Save the residue for determination of heavy metals.

Dissolve the residue from the sulfated ash determination in 23 ml of water, add 2 ml of diluted acetic acid, and run a U.S.P. heavy metals test. The amount of heavy metals does not exceed 20 ppm.

Assay (Salicylamide) Prepare a 0.001% solution of salicylamide as follows: Transfer to a 100 ml volumetric flask 0.1 gm of salicylamide, accurately weighed, fill to the mark with alcohol, and mix. Transfer to a second 100 ml volumetric flask 10 ml of this solution, fill to the mark with alcohol, and mix. Finally transfer to a third 100 ml volumetric flask 10 ml of this last solution, fill to the mark with alcohol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm quartz cell at 302 mμ using alcohol as a blank. The concentration of salicylamide in the solution in mg/ml = absorbancy × 30.2. The amount of salicylamide is not less than 97 or more than 103%.

Prepare an approximately 0.1 N sodium methoxide solution as follows: Cut 3 gm of freshly cut sodium in small pieces, and slowly add to 75 ml of methanol. After all the sodium reacts, add an additional 75 ml of methanol and 850 ml of dry benzene, and mix. Standardize this solution thus: Transfer to a 100 ml beaker, equipped with a magnetic stirrer and cardboard cover with a single hole for the buret tip, about 0.1 gm of benzoic acid, accurately weighed, and add 30 ml of freshly neutralized dimethylformamide containing a few drops of 0.3% solution of thymol blue in methanol. Add the sodium methoxide from a 10 ml buret to a blue end point. Store this standardized solution in borosilicate glassware protected against carbon dioxide and moisture. Transfer to a 100 ml beaker, equipped with a magnetic stirrer and the same cardboard cover, about 0.1 gm of salicylamide, accurately weighed, and add 30 ml of freshly neutralized dimethylformamide containing a few drops of thymol blue. From a 10 ml buret, add the freshly standardized 0.1 N sodium methoxide to the same blue end point. Each milliliter of 0.1 N sodium methoxide is equivalent to 0.01371 gm of salicylamide. The amount of salicylamide is not less than 98 or more than 102%.

Dosage Forms of Salicylamide

Tablets **Identity Tests** Grind a number of tablets equivalent to about 1 gm of salicylamide, and triturate the powder with three 25 ml portions of ether. Filter the ether extracts through a pledget of cotton, and evaporate the filtrate to dryness on a steam bath. The residue responds to the identity tests for the active ingredient in the monograph for salicylamide.

Assay (Salicylamide) Weigh 20 tablets, and powder them. Transfer to a 100 ml beaker, equipped with a magnetic stirrer and cardboard cover with a single hole for the buret tip, an amount of powder, accurately weighed, equivalent to about 0.1 gm of salicylamide. Proceed as directed in the titrimetric assay for the active ingredient in the monograph for salicylamide starting with, "and add 30 ml of freshly neutralized dimethylformamide." Each milliliter of 0.1 N sodium methoxide is equivalent to 0.01371 gm of salicylamide. The amount of salicylamide is not less than 95 or more than 105% of the labeled amount.

The Bowman Bros. Drug Company, Canton, Ohio

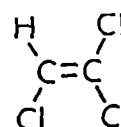
Hexett Tablets Salicylamide 64 mg

Tablets Salicylamide 0.3 gm

Chemo Puro Manufacturing Corporation, Long Island City, N. Y.

Powder Salicylamide Bulk, for manufacturing use

Trichloroethylene-U.S.P.—The structural formula of trichloroethylene may be represented as follows:



Actions and Uses—Trichloroethylene is a volatile liquid that produces prompt analgesia and anesthesia when inhaled. Its action resembles that of chloroform but is more rapid and less potent. It is suitable for inhalation as an analgesic agent only. Anesthetic concentrations do not produce complete muscular relaxation and are associated with tachypnea and bradycardia, sometimes accompanied by extrasystoles. These are signs of overdosage. Tachypnea is a sign that the first plane of anesthesia has been reached and should be regarded as a warning that administration has exceeded the analgesic level. With a suitable inhaler, self-administration under professional supervision is considered relatively safe for producing analgesia, usually without unconsciousness. Patients may experience slight dizziness and numbness the first few minutes. Irritation of respiratory passages (excessive salivation or secretion of mucus), nausea, and vomiting are infrequent. If sufficient vapor is inhaled to produce unconsciousness, the mask automatically falls away from the face to prevent overdosage. Consciousness usually is restored within 20 to 30 seconds. Self-administration should not be permitted while the patient is alone.

Trichloroethylene as an analgesic mixture with air or oxygen is useful in obstetrics during labor and for delivery in conjunction with pudendal block or low spinal anesthesia. It also may be employed as an analgesic agent in minor surgical and

dental procedures and in major operative procedures as an adjunct to light general anesthesia produced by other agents When this drug is administered with inhalation anesthetics standard anesthetic machines with a closed circuit may be used, provided they are adjusted so that trichloroethylene does not come into contact with soda lime If contact with soda lime occurs in closed apparatus, persistent trigeminal neuralgia and other cranial palsies may result from the formation of toxic degradation products (acetylene dichloride, phosgene, and carbon monoxide), formed by the interaction with soda lime

Until further experience is gained, trichloroethylene is not recommended for use in patients with severe cardiac failure, active cardiac disease, or toxemia of pregnancy It should never be employed for induction anesthesia Administration of epinephrine should be avoided whenever trichloroethylene is used

Dosage—Trichloroethylene is administered by inhalation by means of an inhaler device controlled by the patient or a mask or closed-circuit anesthetic machine controlled by an anesthetist Premedication can be carried out according to the preference of the physician During labor or for minor surgical procedures, 10 to 12 self administered inhalations from a suitable device are taken by the patient at the onset of pain When this agent is dropped on a mask or placed in a machine, a minimal concentration should be maintained at all times to avoid even the first plane of anesthesia Trichloroethylene is nonexplosive, it is not flammable when mixed with air, but may become so when mixed with oxygen When the latter mixture is used, there is risk of ignition especially when a cautery is employed In such instances, admixture with air is preferable Trichloroethylene is highly stable when stored in closed containers away from light However, to avoid possible oxidation it is inadvisable to retain any unused portion in an anesthetic machine such portions should be discarded Trichloroethylene may be heated without decomposition, but, when its vapor, diluted with air, is exposed to a naked flame, decomposition occurs giving rise to hydrochloric acid and traces of phosgene The agent or its vapor should not be allowed to come in contact with hot surfaces

Ayerst Laboratories, Inc , New York

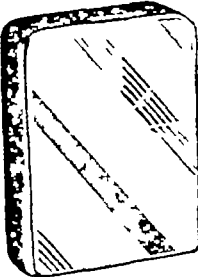
Trilene 6 cc ampuls and 30 cc bottles Stabilized with 0.01% thymol

COUNCIL ON PHYSICAL MEDICINE
AND REHABILITATION

APPARATUS ACCEPTED

The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in *Apparatus Accepted* A copy of the rules on which the Council bases its action will be sent on application

RALPH E. DE FOREST, M.D., Secretary



Acousticon Hearing Aid Model A-300

Acousticon Hearing Aid, Model A-300
Dictograph Products Inc., 95-25 149th St, Jamaica 35, Long Island, N Y

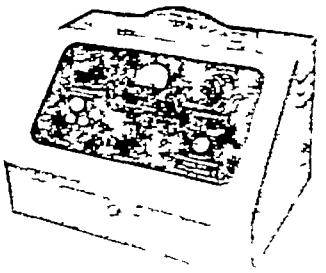
The Acousticon Hearing Aid Model A-300 contains one transistor and two vacuum tubes and is powered by a mercury type A battery and a 22.5 volt B battery

The body of the instrument measures 80 by 60 by 22 mm and weighs 121 gm With earphone, receiver cord, A-battery, and B battery, the total weight is 165 gm

Teca Portable Low Volt Generator, Model SP-2
Teca Corporation, 139 E 23rd St New York 10

The Teca Portable Low Volt Generator Model SP-2, provides a source of electric current for stimulating normally innervated muscle for stimulating muscle with damaged nerve supply for testing with respect to the reaction of degeneration, and for ion transfer The output is either a continuous direct current or an alternating current The latter consists of square waves at frequencies up to 2,000 per second, these can be amplitude-modulated at the rate of 6 to 60 surges per minute

The apparatus is housed in a case with a carrying handle and a sloping front, it measures 26 (height) by 40 by 29 cm (10 by 15½ by 11½ in) and weighs 8.6 kg (19 lb) Packed for shipment it measures 30 by 45 by 35 cm (12 by 18 by 14 in) and weighs 10 kg (22 lb) It requires 60 cycle alternating current at 110 volts and draws 30 watts

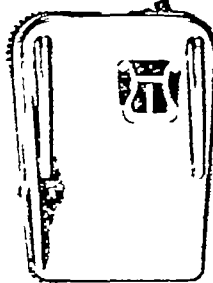


Teca Portable Low Volt Generator Model SP 2

Beltone Hearing Aid, Concerto Model
Beltone Hearing Aid Company, 2900 W 36th St, Chicago 32

The Beltone Hearing Aid, Concerto Model, is a tubeless hearing aid that contains three transistors and requires one 1.25 volt mercury cell The on-off switch and volume control are on one dial, the tone control is operated by a lever that has two settings

The Concerto line includes Green Dot, Yellow Dot, Red Dot, Black Dot, and Double Black Dot Models Their characteristics are summarized as follows

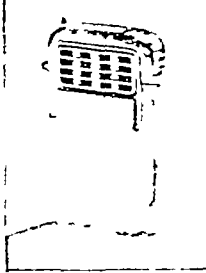


Beltone Hearing Aid Concerto Model

Model	Battery			Approximate Life Hr	Power Output Sound Pressure Level in db Above 0.002 Dynes/Sq Cm
	Voltage	Capacity, Ma Hr	Drain, Ma		
Green Dot	1.25	8.0	1.5	90	123
Yellow Dot	1.25	8.0	0.9	90	122
Red Dot	2.50	3.0	2.5	120	122
Black Dot..	2.50	3.0	2.5	120	124
Double Black Dot	2.50	3.0	5.0	70	137

Sonotone Hearing Aid, Model 988
Sonotone Corporation, Box 200, Elmsford N Y

The Sonotone Hearing Aid, Model 988 is an electrical instrument containing three vacuum tubes and powered by one 1.25 volt A-battery and one 15 volt B battery It has volume and tone control and receivers for both air and bone conduction The body of the instrument measures 76 by 44 by 16 mm and weighs 68 gm The batteries earphone and receiver cord weigh 24.3, 7.7, and 2.8 gm., respectively, making the total weight 103 gm



Sonotone Hearing Aid Model 988

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AIR POLLUTION

Air pollution is a complex problem that has been growing since coal was first used. Disasters due to the exposure of communities to dense smog for several days have focused public attention on the importance of control measures. In the latest such disaster, in December, 1952, in London, the concentration of smoke in the air reached 4.46 mg per cubic meter, and that of sulfur dioxide reached 1.34 ppm.¹ Although heavy industries discharge vast quantities of smoke into the air, coal burning railroad engines, motor vehicles, and furnaces from private homes and apartment buildings are also important sources of air pollution.

While most persons recognize air pollution as a nuisance, the determination of concentrations of various pollutants necessary to be definitely injurious to health is a far more difficult matter. The chief effects noted are irritation of the upper respiratory tract and conjunctiva. In this problem the effects of exposure to high concentrations of pollutants for a short period and the effects of prolonged exposure to low concentration are usually studied. The latter is especially difficult to evaluate. The maximum allowable concentrations of various pollutants in a community can best be determined by studying their effects on a more limited scale in industrial workers subject to daily exposures to polluted air.² In order to establish a causal relationship between disease and exposure it is necessary to show that "(1) a toxic effect has occurred, (2) a pollutant capable of causing this effect is (has been) present, (3) there is (has been) an excessive exposure to the pollutant, and (4) other causes of the toxic effects do not exist."³

In attempting to get remedial measures adopted it is well to reinforce hygienic arguments with other, more purely economic, arguments, such as toxic effects on grazing animals in some areas, reduction in agricultural yield, discoloration and disintegration of stone, mortar, and metals of buildings, increased cleaning and illumination costs, and loss through dispersion of valuable by-

products.⁴ Residential districts should not be built in the direct line of the prevailing wind from a heavy industry. When the wind is found to blow heavy smoke from a plant toward such sections or when atmospheric conditions favor smog, extra controls in the form of filtration or partial shutdown should be applied. Industries should especially avoid locating in narrow valleys subject to frequent stagnation of the air by having meteorological surveys made of proposed sites.

That something can be done about air pollution has been amply demonstrated in Detroit,⁴ Los Angeles,⁵ and other cities. In 1947 Detroit organized a control program. As a result, the average horizontal visibility has been greatly improved and fly ash no longer accumulates along curbs and in doorways. In Los Angeles it is estimated that over 600 tons of air pollutants per day formerly dispersed over the city are now withheld from the air, 360 tons of sulfur and 100 tons of gasoline are reclaimed daily, the sulfur dioxide content of the air has been reduced 50%, and the average visibility has been increased. These improvements have resulted from a large outlay in time and money by the community and industries, but they have been worth the cost.

Increased populations, technological changes in industry, and the use of new products give rise to new community problems faster than the old ones can be solved. No complete solution to the problem of air pollution can be expected, but there is a great need for those cities that have not yet done so to clean up their air. Other cities have shown that it can be done.

COLD INJURY

Although military operations are attended by the greatest incidence of cold injury, many persons in civil life may be suddenly exposed to frostbite or immersion foot as a result of a cyclone, flood, or occupational hazard.¹ The danger is increased if the person exposed has an appreciable degree of peripheral arteriosclerosis. In the production of tissue damage, it was formerly believed that the associated vascular changes were secondary to the cold injury, but it now appears that the tissue damage is secondary to such vascular changes as vasoconstriction, vasodilation, sludging of blood, and thrombosis. The feet are especially vulnerable because of their dependent position. The damage may be aggravated by immobility, which favors sludging of the blood, as well as by walking. That the exact pathogenesis of cold injury is complex and not fully understood is shown by the fact that some animals can hibernate without incurring cold injury and certain tissues can be refrigerated and later used as grafts.

There is a pronounced difference in the ability of different persons to withstand exposure to cold and in the same person at different times. In addition to the temperature and duration of the exposure, the humidity and wind velocity enter into the picture. Advanced age, especially in the presence of peripheral vascular disease, poor general physical condition, high cold agglutinin titer, belonging to a dark skinned race, and having had a previous frostbite decrease resistance to cold injury and should be taken into account in any effort to prevent such injury.² It is estimated that only about 50% of

¹ Doyle, H. N. Polluted Air, a Growing Community Problem, *Pub Health Rep* 68:858 (Sept.) 1953.

² Princel, F. Public Health Aspects of Atmospheric Pollution, *Am J Pub Health* 44:206 (Feb.) 1954.

³ Phair, J. J. Epidemiology of Air Pollution, read before the Symposium on Air Pollution sponsored by the Instrument Society of America, Philadelphia Section, Philadelphia, Nov. 19, 1952.

⁴ Linsky, B. Air Pollution and Man's Health, *Pub Health Rep* 68:870 (Sept.) 1953.

⁵ Larson, G. P. Air Pollution and Man's Health in Los Angeles, *Pub Health Rep* 68:872 (Sept.) 1953.

¹ Pratt, G. H. Frostbite Therapy, *J Am Geriatrics Soc* 2:305-316 (May) 1954.

those who incur cold injury had warning symptoms of sufficient severity to attract attention. These patients may complain of feeling cold, stinging pain, and numbness in the involved part. Some of these patients, believing their feet to be asleep, pound them or hop on them "to get the circulation started." This trauma increases the ultimate tissue damage. Unfortunately, others remove their shoes to obtain relief and then because of swelling are unable to get them on again, so that greater exposure occurs. Exposure to cold in high altitude flying is accompanied by anoxia. This also aggravates the injury.

If the circulation is not irreparably damaged the tissues will regenerate very well, but clinical evaluation of any form of treatment is made difficult by the fact that examination of the recently injured part at the time treatment is started gives no clue of the extent of the injury. For this reason Isaacson and Harrell³ studied 33 patients who were believed to have had bilaterally equal injury. They performed a unilateral sympathectomy so that each patient was his own control. The aim of treatment is to prevent gangrene, but in their series there was no significant difference in the extent of the gangrene or amputation required between the treated and the untreated side. They concluded that sympathectomy is useful only in the treatment of late sequelae (healing chronic ulcers, relieving paresthesias, or improving circulation).

In the emergency phase of treatment there was some difference of opinion as to the relative merits of slow rewarming and rapid rewarming. As the result of animal experimentation rapid rewarming is now generally accepted as the method that will result in the least gangrene, but there are still some differences in the details of the technique advised. Because water is a better conductor than air, rapid rewarming should be accomplished in a water bath. Russian investigators⁴ warned against using bath temperatures higher than 98.6 F, but Gottschalk recommends a temperature of 108 F.⁵ Pruitt⁶ recommends a temperature of 86 to 89 F and warns against temperatures of 100 F or over. A more accurate determination of the optimal temperature of the rewarming bath could be arrived at by using a controlled series such as that reported by Isaacson and Harrell. All agree that massage should be avoided. Once the part has been rewarmed it should be left exposed in cool surrounding air at 70 to 78 F. Pressure dressings and the application of ointments are to be avoided. Because smoking causes vasoconstriction it should also be avoided.

Some authors favor the use of heparin to prevent thrombosis, provided there is no evidence of bleeding, but others believe that it is of doubtful value and that it adds an unnecessary risk. If it is used, it should be given early in the course of treatment.⁵ Vasodilators have not been shown to be of value, except possibly in patients who show signs of sympathetic overactivity during recovery. Corticotropin, cortisone, and rutin have not been found to have any favorable effect. Pratt¹ advocates the use of procaine intravenously for pain, but Gottschalk states that such drugs as meperidine are safer and easier to administer. Bed rest is necessary to prevent trauma until the bullas have dried. The surgical treatment should be ultraconservative because when the necrotic tissue has sloughed off there is usually much less loss of tissue than was anticipated. Some grafting

may be required, but amputation should be used only when spreading infection endangers the patient's life.

Great strides in our understanding of cold injury have been made since the days when such injuries were rubbed with snow. Recent military campaigns have provided ample material for observation and have helped to clarify some of the points of major controversy.

RENAL TRAUMA IN PROFESSIONAL BOXERS

Physicians who are attracted to the numerous telecasts of boxing prowess that are indigenous to the American scene may have wondered about the severity and extent of renal injury sustained by professional boxers. An answer is partly supplied by a recent study by Amelar and Solomon¹ on 103 professional boxers who fought at the Madison Square Garden and at St. Nicholas Arena in New York City during 1952 and 1953. A freshly voided specimen of urine was collected from each boxer on the day of the fight and examined within an hour. After a bout, another specimen was obtained from each boxer within 5 to 20 minutes. Each specimen was examined for color, turbidity, specific gravity, pH, glucose, albumin, and acetone, a detailed microscopic examination of the sediment was also made. In 46% of the fighters the urine, which was clear before a bout, became turbid afterward. Albumin, not present before the bout, appeared in 68% of the urinary specimens after the pugilistic encounters. Traces of acetone appeared in the urine of 14% of the boxers, urinary specific gravity increased in 80%, urinary pH decreased in 39%, and glucose appeared in 9%. Significantly, microscopic examination showed that in 73% of the urine specimens red blood cells appeared immediately after a bout, while 26% of the boxers had granular or hyaline casts in the postcombat urine. According to the authors, red blood cells and casts are not found in the urine of persons engaging in strenuous exercise, although various investigators have reported that exercise produces a decrease in urine volume, a reduction in renal plasma flow and filtration rate, a decrease in the chloride concentration, and an increase in urinary acidity, ammonia, and phosphates. Strenuous exercise can cause albuminuria.

From this study it appears that the effects of acute renal trauma sustained in professional pugilistic bouts can be determined in part by appropriate urinalysis. Acute renal trauma is revealed by the findings of red blood cells, casts, and a high percentage of albumin. The door remains wide open for further study of other aspects of the problem, such as the question of the effect of repeated injury to the kidneys on renal function. This might be done on a group of boxers who are retired. An immediate application of this study is the suggestion that a boxer who has sustained renal punishment should not be allowed to fight until his urinary findings are normal.

2. Orr, K. D., and Falner, D. C. Cold Injuries in Korea During Winter of 1950-51. *Medicine* 31: 177-220 (May) 1952.

3. Isaacson, N. H. and Harrell, J. B. The Role of Sympathectomy in the Treatment of Frostbite. *Surgery* 33: 810-817 (June) 1953.

4. Brandstadt, W. G. Frostbite. *Mil Surgeon* 107: 346-348 (Nov) 1950.

5. Gottschalk, C. W. Frostbite. *Med. Concepts Cardiovas Dis* 22: 202-205 (Dec.) 1953.

6. Pruitt, F. W. Management of Frostbite in the Korean War. *Nebraska M J* 39: 3-8 (Jan.) 1954.

1. Amelar, R. D. and Solomon, C. Acute Renal Trauma in Boxers. *J Urol* 72: 145 (Aug.) 1954.

ORGANIZATION SECTION

CIVIL DEFENSE

Following is the first section of the third and last of a series of articles on medical civil defense plans that have been prepared for the state of Maine. These plans are being published as samples for those states that have not as yet completed this phase of medical civil defense planning.

Plans for Special Weapons Defense Part III Chemical Agents Defense Plan, Section 1

Adequate measures for safeguarding the civil population against the direct effects of modern war must become an essential part of any state civil defense organization if the nation is to survive in this age of fast, long-range jet bombers and supersonic guided missiles. It is just as necessary that these preparations for civil defense be made in time of peace as it is that the armed forces be maintained in a state of readiness at all times. Furthermore, any up-to-date, well-balanced plan for effective civil defense must take into account all the various weapons that might be available to an enemy. It is imperative that a proper balance be held between the likely and the possible special weapons. Civil defense agencies must be prepared to deal immediately with all probable types of attack but should be especially alert to those types that could inflict heavy damage to life and property from a long range. Among these are attacks by air with the newer agents of chemical warfare like the nerve

ses or, possibly, with mixtures of the older types of vesicants the newer nerve poisons. The Germans had a large quantity of the nerve gas "Tabun" on hand at the end of World War II at they had never used against the allied armies or their civilian population centers. The Russians are known to have captured several hundred tons of nerve gas and to have taken over the German nerve gas production centers and most of the scientists who were familiar with the manufacture of these new chemical agents. Therefore, it must be assumed they know as much about this new group of chemical weapons and their potentialities as does our own Armed Forces Special Weapons Division. Neither the United States of America nor the Union of Soviet Socialist Republics was a signer of the Geneva Gas Protocol of 1925, hence, the United States has at present no signed agreement with any nation guaranteeing that chemical warfare agents will not be used against us in the event of war. The fact that gas was not used during the last war might well increase the possibility of its future use in the hope of achieving the surprise on which the success of any gas attack largely depends. Large bomber and fighter airfields have been built and activated within this state beside one of our largest cities and two of our medium-sized towns. Any attack on these military targets with nerve gas could subject much of our civil population to the lethal effects of these new chemical agents, if the wind were blowing from the airfield toward the urban center. Furthermore, nerve gas bombs might be jettisoned onto other cities during an enemy air raid if their bombers were closely pursued by our fighters. Hence, the Maine civil defense authorities are agreed that gas warfare is still one of the risks that the civil population of this state must be immediately prepared to face and that chemical defense training must be instigated and provisions made for providing protection, equipment, and supplies for use by the detection and decontamination units, as well as for the civil population in certain urban centers.

The chemical defense organizational and operational plan prepared for Maine closely follows that devised by the armed forces of the United States since World War II. It will be presented in two sections. Organization and operation of detection units and specific detection procedures are outlined below, the organization and operation of decontamination units and specific decontamination procedures will comprise the second section of this chemical defense plan. Any plan for defense against chemical warfare agents may have to be altered from time to time, hence, only basic organizational and operational procedures are outlined in essential detail, and these will need to be

supplemented as additional material and information become available.

RECOMMENDED TABLE OF ORGANIZATION AND EQUIPMENT

Chief of Section—An Assistant State Deputy (Chemical) Director #3 to serve as "Chief," Chemical Defense Section, whose duties will be as follows:

- 1 Responsibility through the "Chief," Special Weapons Division, to the State Deputy Director #3 for (a) organization of a State Advisory Panel and presiding at the meetings, (b) preparation of a State Chemical Defense Plan, after consultations with the State Advisory Panel and the Chief of the Special Weapons Defense Division, (c) organization and training of the required number of high-level chemical detection units to be located at the state university, the three Maine colleges, and strategically located, large industrial plants within the state, (d) preparation of a questionnaire listing dangerous chemicals, to be sent to all plants in the state to determine the number and quantities of such hazardous chemicals on hand at each mill or plant, (e) preparation of a set of field and high-level laboratory tests for the identification of chemical warfare agents, after consultations with the State Advisory Panel and the Chief of the Special Weapons Division, (f) organization and training of special weapons decontamination units as required at strategically located industrial plants and mills throughout the state, after consultations with the chiefs of the Radiological and Biological Sections and the Chief of the Special Weapons Division, and (g) preparation of the specific chemical decontamination procedures to be carried out by the special weapons decontamination units.

- 2 Advising each county civil defense director and his #3 deputy director and the chief of the latter's chemical defense section in regard to the number and location of chemical detection and special weapons decontamination units required in said county.

- 3 Prescribing the chemical defense training schedule to be followed by detection and decontamination units organized at the regional, county, or local levels.

- 4 Working closely with the chiefs of the Biological and Radiological Sections and the Chief of the Special Weapons Division with a view to working out a well-coordinated and carefully integrated special weapons defense plan and organization for the entire state.

State Advisory Panel—This group will

- 1 Consist of professors of chemistry of college or graduate-school level and selected research and analytical chemists from large industrial plants.

- 2 Operate under the direction of the Chief of the Chemical Section.

- 3 Assist the Chief of the Chemical Section in working out chemical agent identification and decontamination procedures and techniques to be used by the chemical detection and decontamination units.

- 4 Help establish at strategic locations, preferably at the colleges or in the industrial laboratories, facilities for the identification of unknown chemical agents that might be used against our military targets and industrial centers in war.

- 5 Assist with the organization and training of the regional chemical detection units described below. The members of the panel may, if they choose, join these units for training and during emergency operations. Furthermore, members should assist the county and local chemical defense chiefs with the training of lower-level detection and decontamination units organized within their respective regions.

Chemical Agents Detection and Reconnaissance Units—These units are organized as follows:

Senior Chemical Officer—State and Regional Professors of chemistry from the university and from each college have been

designated to direct the formation of chemical detection units in the vicinity of their respective schools and to assist in the training of the personnel assigned to each such unit. The senior chemical officer and the members of his unit will be under the direction of and responsible to the Assistant (Chemical) State Deputy Civil Defense Director #3. Research or analytical chemists from large mills or industrial plants have been designated to organize chemical detection units and decontamination units in their respective mills or industrial plants. These unit leaders will serve as regional senior chemical officers and will be under the direction of and responsible to the Assistant (Chemical) State Deputy Civil Defense Director #3. These regional chemical agent detection and reconnaissance units may be attached to the nearest state mobile battalion for transportation, messing and billeting during actual operations in an emergency certified by the governor of the state.

Senior Chemical Officer—County or City. An instructor in chemistry or an industrial chemist should organize and train chemical and bacteriological detection units at the county and town levels where such units are required. This officer should be responsible to the County or City Deputy Director #3 for developing and promoting the chemical and bacteriological detection program at these lower levels.

The composition recommended for chemical and bacteriological identification and reconnaissance units is as follows:

State and Regional Units Under State Direction

Chemist (1)		Chemists (2)
Bacteriologist (1)		Chemical assistants (2)
	OR	Decontaminator (1)
Chemical assistants (2)		Driver loader (1)
Decontaminator (1)		
Driver loader (1)		

County and City Units Under Local Direction

Chemist (1)		Chemists (2)
Chemical assistant (1)		Chemical assistants (2)
Bacteriologist (1)		Decontaminator (1)
	OR	Driver helper loader (1)
Bacteriological assistant (1)		
Decontaminator (1)		
Driver helper loader (1)		

Duties of the Field Detection Units.—The first duty of field detection units after an enemy attack should be to confirm the presence or absence of war gases in suspected areas and to report the type of gas used and the extent of the contaminated areas to the control authority as soon as possible. Wind direction and the rate of spread of vapor gases should also be determined and Civil Defense Headquarters informed. All contaminated areas must be marked off. Persons in contaminated areas at the time of the attack must be brought out of the gassed area as quickly as possible, first aid procedures instigated promptly, and the badly gassed persons evacuated to medical installations for treatment. All persons must be evacuated from the downwind section adjacent to gassed areas. Unauthorized persons must be kept out of the danger areas until suitable decontamination procedures can be completed.

Field detection teams must provide the high level detection units with samples of air containing the vapor form of unknown war gases. A description of the apparatus and the techniques to be used in collecting contaminated specimens appears below. The field detection units must collect samples of contaminated solid or liquid materials to be sent back to the high level units for more detailed testing and analysis.

Methods and Equipment for Detection Units.—A chemical agent sampling kit will be needed that should contain several empty screw-cap sample bottles, a scoop, long medicine droppers, rubber gloves, blotting paper, cotton toweling and a notebook and pencil. The apparatus contained in this kit will enable the unit in the field to take samples of solid chemical agents suspected of being in the soil, on vegetation or on hard surfaces. Each detection unit should carry one combustible gas indicator, similar to that made by the Davis Emergency Equipment Co., Inc., Newark, N. J., for the detection of inflammable

gas mixtures. This equipment is necessary for the protection of unit personnel when they are obliged to enter areas where gasoline, benzol, turpentine, etc., may have been liberated or buildings where gas mains may have been broken, releasing city gas or commercial gas in explosive concentration.

The members of the gas detection units should always approach every area suspected of gas contamination with great care and with all senses alert. It is one of the most fundamental duties of all concerned with detection and reconnaissance not to get themselves contaminated or become casualties, through carelessness. If they do, they are unable to carry out their particular task and at the same time will put a still further load on the medical services. Detection personnel should try to keep upwind of contaminated areas except for that actually being investigated at the moment. A continuous watch must be kept on the direction of the wind in the vicinity and the position of any other gas incidents previously reported should be borne in mind. The nonpersistent gases or particle clouds will be difficult to collect in most instances because this vapor or cloud will probably be dissipated before the field detection unit can reach the gassed area. However, an attempt can be made to collect samples by placing unimpregnated silica gel granule detector tubes in either the Andrews (fig. 1) or the Bournique (fig. 2) gas detection apparatus and drawing specified quantities of the contaminated air through the collection tubes. Vapor from an agent of low volatility can be concentrated by placing a can or box over the liquid for a few minutes which allows time for sufficient vapor to collect inside the container. Then a small hole should be made in the container, and the funnel at the distal end of the collecting tube attached to the collecting apparatus should be placed over the hole and the contaminated air drawn up through the silica gel collecting ampul. Samples of air suspected of containing war gas vapor should always be taken on the downwind side but close to the source of contamination, such as a shell hole or an object suspected of being contaminated.

CHEMICAL AGENTS DETECTION PROCEDURES

The development of the extremely potent new group of almost odorless and colorless nerve gases—Tabun, Sarin and Soman—by the German chemists prior to and during World War II has rendered obsolete many of the older war gases and has necessitated a radical revision in recommended detection methods. Chemical tests for the war gases must be relied on instead of the senses of smell, sight and touch. Great stress must also be placed on keeping a careful watch for the sudden appearance of any of the following symptoms among persons out in the open immediately after any possible enemy attack: (1) pinpoint pupils with difficulty in focusing on near objects, (2) acute frontal headache, (3) running nose, (4) an asthmatic feeling of choking and tightness in the chest accompanied by cyanosis and severe bronchial spasm that obstructs both inhalation and exhalation, (5) nausea and vomiting, (6) mental confusion and loss of consciousness, and (7) convulsions and death. These clinical effects on exposed persons will likely be the first and best indication that nerve gas has been released in the area, since no simple, quick chemical test for the satisfactory initial detection of nerve gas has yet been made known. However, reliable chemical detection tests and practical detection sets will be required for detecting persistent vesicant and nerve gases in liquid form and for determining when the volatile forms have become sufficiently dissipated by the wind to permit personnel to enter areas without gas masks and protective clothing. Until our enemies establish military bases on the North American continent, it would seem that civil defense against chemical attack could for practical purposes be reduced to detection methods for nerve gases; however, it should be kept in mind that some persistent vesicant gas could be used with volatile nerve gas to hamper rescue operations, or mixtures of war gases might be used to make identification more difficult. Of the war gases now known, use of the nerve gases Sarin and Soman and the vesicants mustard and nitrogen mustard is considered most probable. Lewisite, dichloroethylarsine, hydrogen cyanide, phosphogen and cyanogen chloride are the likeliest of the other war gases for which high-level detection units should have identification tests. In case certain of these chemical agents should be mixed with nerve gases for their nuisance value.

Field detection teams will be required to wear the gas mask and impermeable, butyl-rubber-coated protective clothing consisting of a hood, a coverall-type, single-piece suit, gloves, one pair of boot covers, and one pair of rubber boots until the presence of persistent liquid nerve gas can be ruled out. Since the impermeable suits and accessories are impervious to air and to body perspiration, the suits will very quickly give rise to great discomfort to personnel wearing them during hot, humid weather unless a two-piece, diaper-cloth suit is worn over the impermeable suit and kept well wet with water. Obviously, chemical detection personnel with a limited amount of technical training and skill and wearing heavy-duty gas masks, heavy rubber gloves, and other protective clothing cannot be expected to carry out a series of complicated detection tests for poisonous gases in the field under wartime disaster conditions. The field detection and collection apparatus should be easy to operate, and the field detection tests should be single-step, easily carried out procedures limited, if at all feasible, to one or two in number.

Detection of War Gases by Field Units—Mr. A. B. Andrews, Chief of the Special Weapons Division, has designed a simple apparatus (fig. 1) for the identification of war gases in the field.

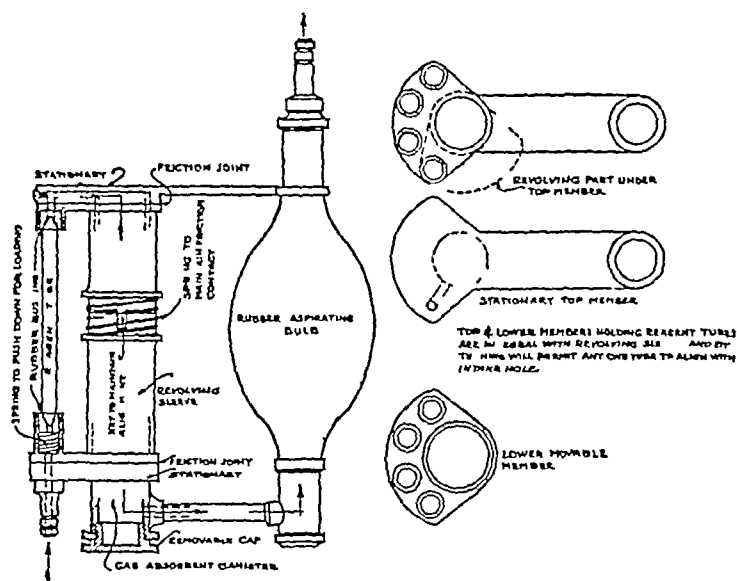


Fig. 1—Andrews apparatus for field testing of war gases

and for the collection, on silica gel granules in ampuls, of the air samples required for the high-level tests. This apparatus is a modification of an apparatus originally designed by the Mine Safety Appliances Co. for the detection of carbon monoxide. The direction of flow has been reversed and an intake and outgo manifold added so that one or two ampuls containing test reagent on indicator paper or silica gel granules and two unimpregnated gas collection ampuls containing plain silica gel granules can be inserted into the apparatus at the same time. The contaminated air can pass simultaneously through the detection and collection ampuls first, after which it will pass through a gas-absorbent canister before reaching the inside of the suction bulb, or air can be drawn through test ampuls one at a time by simply closing a cutoff to each of the other test and collecting ampuls.

Universal Indicator Paper or Solution as a Qualitative Test for Probable Hydrolyzable War Gases Universal indicator may well prove to be a good single, qualitative test reagent for the detection of war gases in the field. Nitrogen mustard gives an alkaline reaction, whereas all of the other more probable vesicant gases, choking gases, and blood gases and, presumably, Taban, Sarin, and Soman give an acid reaction with the universal indicator. It is believed that universal indicator paper, with proper moisture content and suitably sterilized, could be sealed into glass ampuls designed for use in the Andrews detection apparatus. An acid or an alkaline reaction on the indicator paper would indicate the possible presence of war gases in an area. Detection personnel should then collect samples of the contaminated air on silica gel granules for more specific testing by the high-level detection personnel outside the area of con-

tamination. Other nonwar gases in the area might give false positive tests with universal indicator, but it would be equally unwise for persons to enter areas where such gases were in sufficient concentration to give a reaction with universal indicator test paper. It will be necessary to ascertain the effects of the various chemical agents in the gaseous state on universal indicator paper before it will be known with certainty whether all the gases named above will give either an acid or an alkaline color reaction at sufficiently low concentrations. If some or all of the nerve gases fail to give a distinctive reaction in the

Materials Required for Detection Units

Equipment	No. Required Per Unit
1 Chemical agents detection kit, field type	2
One of the following types should be selected	
(a) Andrews (bulb type)	
(b) Lever air flow type	
(c) Bournique type	
(d) Jacobs type	
2 Chemical agents detection kit, high level type *	2
One of the following types should be selected	
(a) Lever air flow type	
(b) Bournique type	
(c) Chemical Agent Detector Kit M9-A2,† Department of the Army, if available	
3 Combustible gas indicator	1

Supplies

- 1 Reagents required for detection apparatus selected
- 2 Replacement glassware and tubing for detection apparatus used
- 3 Supplies required for adequate decontamination of detection apparatus and protective clothing †
- 4 Marker signs and marker tape for marking gas-contaminated areas

Impermeable Protective Clothing (Butyl Rubber Coated)

1 Suit, protective, impermeable, one piece, M3 †	8
2 Hood, protective, impermeable, M3 †	8
3 Gloves, protective, impermeable, M3 †	8
4 Boots, rubber, short, heavy knee, pair	8
5 Covers, boot, impermeable, pair, M1 †	8
6 Suit, cooling, two piece (jacket & trousers) diaper cloth, M1 †	8
7 Hood cover, cooling, M1 †	8
8 Mask, protective, M9A1 † or other approved type	8
9 Impermeable protective apron, M1 †	8

Protective Accessories

1 Protective ointment kit, M9A1 † includes	8
(a) Protective ointment, 3 tubes, M5 †	
(b) BAL eye ointment, 1 tube	
(c) Atropine tartrate injection, 3 tubes	
2 Protective dubbing for shoes or leather boots, can	8

Decontamination Equipment

1 Decontamination apparatus, 1½ qt., M2 †	4
2 Decontamination apparatus, 3 gal., M1 †	

* High level detection kits should be supplied only to regional units under state civil defense control, and not to county and city units under local control.

† The letters and numbers refer to the armed forces numbers for these items and are included to facilitate matters if these items are eventually made available to civil defense agencies.

‡ To be described in Section 2 of this plan, to be published.

vapor form with universal indicator paper, it will be necessary to devise some other simple qualitative test for the detection of all types of war gases in the field, if a single, simple test cannot be perfected, separate tests for the identification of the nerve and the vesicant agents in the gaseous state may be required. Examples of such diagnostic tests that may prove adaptable for field use are listed below.

Silver Test for the Detection of Nerve Gases The nerve gases Sarin and Soman are basically phosphine oxide derivations. Since phosphine may be detected by the brown to black color

imparted to ammoniacal silver nitrate solution, it may be possible to detect nerve gas vapor in the field by drawing air through an ampul that contains silica gel previously impregnated with ammoniacal silver nitrate solution. The silica gel should darken and finally assume a brownish color if nerve gas is present in the air sample. Actual experiments using the nerve gases in vapor form will be necessary to determine whether a distinctly positive test will be given with this ammoniacal silver nitrate reagent under conditions that would exist in the field. All ampuls containing this silver test reagent would need to be wrapped in tinfoil or dark paper to keep out the light prior to their actual use. Heat might have to be applied to the test ampul after the air sample is passed through the silica gel impregnated with the ammoniacal silver nitrate solution in order to induce a positive test reaction. Any acid gas in sufficient concentration would neutralize enough of the base to permit the appearance of a colored silver compound on the impregnated silica gel.

Acidified Iodoplatinate Paper for the Detection of Nitrogen Mustard Vapor. Nitrogen and sulfur mustards are the two next most probable to be encountered of the war gases. Nitrogen mustards are bases and will give a basic reaction with suitable indicators. A more specific test for both vapor and liquid forms of nitrogen mustards is acidified iodoplatinate paper. This indicator paper can be made by soaking filter paper in a solution containing sodium iodoplatinate, glycerol, and phosphoric acid and then drying in a clean atmosphere. This acidified iodoplatinate indicator paper should turn blue when air containing nitrogen mustard gases, either as free bases or in the form of salts, is drawn through an ampul containing the indicator paper in the Andrews apparatus.

Congo Red Indicator Paper Test for Mustard Gas Vapor. The mustard gases give an acid reaction with suitable indicators and, in this respect, differ from the nitrogen mustards, which give an alkaline reaction. The Congo red indicator test for mustard gas depends on the reaction of a stable chloroamide with mustard gas with the liberation of free hydrochloric acid, which turns Congo red indicator paper blue. Halozone might meet the requirements for a stable chloroamide, but this chloroamide would need to be tried out in tests with the mustard gases. The air to be tested (either atmospheric or that which has been contaminated by passage through earth samples) is drawn by means of the bulb of the Andrews detection apparatus through an ampul containing Congo red paper that has previously been spotted with a solution of the stable chloroamide dissolved in carbon tetrachloride and allowed to dry. When mustard gas vapor in high concentration is present in the air sample, the spot darkens and finally appears as a blue area on a red background. Nitrogen mustard gives a negative reaction with Congo red test paper spotted with a saturated carbon tetrachloride solution of a stable chloroamide. This test has the added advantage that the amount of aspirated air required to produce this change can be used as an indication of the concentration of the mustard gas. Acidic vapors and all strong acids interfere with this Congo red-chloroamide test for mustard gases, but this situation can be utilized in the detection of easily hydrolyzable chemical agents such as lewisite in earth samples. The presence of such poisonous substances should be suspected if all the Congo red paper turns blue. The chemical warfare agents that will cause the overall blue coloration of the Congo red test paper are lewisite, methylchloroarsine, phenylchloroarsine, cyanogen chloride, sulfur trioxide, chlorosulfonic acid, and white phosphorus. When both acid gases and mustard gas are suspected, the former may be removed by passing the air sample through a filter that has been impregnated with a 10% solution of sodium carbonate and allowed to dry. The mustard gas vapor passes through the sodium carbonate filter and reacts in the usual way with the chloroamide spotted on the Congo red paper.

Detection of the Persistent Liquid War Gases in the Field.—Each field detection unit should be equipped with a shaker package containing an indicator powder that will give a distinctive color change when brought in contact with persistent vesicant and nerve gases in liquid form.

Detector Powder MK 1. The MK.1 powder, devised by the British, comes in shaker packages suitable for use by field detection teams. The following instructions appear on the MK.1

pack. Sprinkle a thin layer of powder over suspected damp surfaces. The rapid appearance of a bright color denotes presence of liquid war gas. Nerve gas gives a yellow or orange color. Blister gas gives a reddish or purple color. This powder is ideal for the detection of persistent war gases in the liquid form since it is claimed that the powder gives these distinctive color changes for both the nerve gases and the blister gases. Inquiries have been made through Mr. D. C. Evans, A.D., Tech Services (Land), British Joint Services Mission Washington, D. C., with a view to arranging the purchase of a supply of this powder through regular commercial channels.

The Lever Detector Powder and Crayon for the Detection of Liquid Blister Gases. Mr. Wendall Lever, former chief of the Maine Civil Defense Chemical Section, has devised a detector powder for use by the field detection units in testing for persistent liquid blister gases. This powder is made up of 1 part of Sudan IV, 5 parts of Sudan III, and 94 parts of talc or chalk. A blue-green color develops as soon as the powder comes in contact with any of the liquid vesicant gases. Persistent nerve gases do not, as far as is now known, react with this Lever indicator powder. An indicator crayon can be made up from 1 part of an equal mixture of Sudan III and Sudan IV, 9 parts of plaster of Paris and 90 parts of precipitated chalk. The ingredients are mixed and enough water added to make a thick paste, which is transferred to molds and allowed to dry. This Lever crayon shows an immediate blue-green color when the persistent blister gases come in contact with the Sudan III and IV dyes in the detector crayon.

The S. D. Warren Company Indicator Paper for Detection of Blister Gases. An excellent white vesicant indicator paper was developed by the S. D. Warren Co., Inc., Westbrook, Maine, for the State Civil Defense Agency in Maine, Massachusetts, and Rhode Island during World War II. This indicator paper turns bright blue when the persistent liquid vesicants come in contact with it, but as far as is known this paper will not indicate nerve gas in any form. This vesicant indicator paper can still be purchased from the manufacturer.

Confirmatory Tests for the Specific Identification of War Gases.—Since the introduction of chemical warfare during World War I, many new agents have been developed as chemical weapons. Information about many of these substances has been carefully restricted, hence, it is difficult to propose a scheme of detection for chemical warfare agents that will be entirely adequate. As a further result of this secrecy we must largely rely for detection on techniques developed from 1918 to 1942, supplementing these with tests based on such meager information as is available concerning the more recently developed war agents. It is on this basis that the following scheme of analysis is proposed for use by the Maine Civil Defense Agency. The information that follows has been gathered from a number of unrestricted sources, few of which have originated since 1943.¹

The various confirmatory tests for the detection of chemical warfare agents can be classified into two groups, namely field tests (F), those that are simple and give an immediate, detectable response to the agent and are, therefore, suitable for field use for immediate warning of the presence of gas, and high-level tests (H), those more complicated ones that do not permit an immediate detection, since one or more chemical operations

1 Sources of the information in this article and other publications on this subject are: Sartori M. *The War Gases Chemistry and Analysis* New York, D. Van Nostrand Company Inc., 1939. Jacobs M. B. *War Gases Their Identification and Decontamination* New York Interscience Publishers Inc. 1942. Studinger J. *A Short System of Analysis for the Detection of Materials Used in Chemical Warfare* Chem. & Ind. 56: 225, 1937. Hoogveen, A. P. J. *The Detection of Small Quantities of War Gases* ibid. 59: 500-556, 1940. Hickey F. C., and Hanley J. J., *War Gas Identification Sets*, J. Chem. Educ. 19: 360, 1942. Bradley T. F. *Chemical Detection of War Gases for Civilian Defense* Chem. & Engng. News 20: 893, 1942. *Identification of Chemical Warfare Agents* Publication 2219 United States Office of Civilian Defense Medical Division, October 1943. Snell F. D. and Snell C. T. *Colorimetric Methods of Analysis* ed. 3 New York, D. Van Nostrand Company Inc., 1949, vol. 2, pp. 660-672. Jacobs, M. B. New York City Department of Health Chemical Agent Detector Kit, issued by the author, January 1954. Chapman N. B. *Heap R., and Saunders B. C. Determination of Fluorine in Organic Compounds* Analyst 73: 434, 1948. McCombie H., and Saunders B., *Alkyl Fluorophosphonates* Nature 157: 287 and 776, 1946. *Fluoroacetates and Allied Compounds* ibid. 158: 382, 1946. Sartori M. F. *New Developments in the Chemistry of War Gases* Chem. Rev. 48: 225, 1948.

are involved after the sample has been collected, and are, therefore, best done in the laboratory. Tests of type F can generally be carried out with simple equipment by personnel that has had a minimum of chemical training. However, such tests are rarely specific for any one war agent and often give false positive tests, therefore, it is necessary to supplement such tests with those of type H, which usually require somewhat more elaborate equipment and more thoroughly trained personnel, but which can often give very specific information concerning the nature of the war agent. In the following discussion each test will be classified as either F, suitable for field use, or H, more suitable for high-level laboratory use. The F tests will be given first in each of the sections listed below.

Some of the F tests can be carried out by the use of test papers or powders that are sensitive to the war agent in question and undergo a change of color on exposure to contaminated air, liquids, or surfaces. In some cases it may be more convenient to use an aspiration system, which draws suspected air through or over an active form of the test material on test paper or silica gel granules. When this is the case, the apparatus shown in figure 1 or figure 2 may be used. The apparatus shown in either figure 3 or figure 4 may generally be used for H tests. The Lever air-flow test equipment (fig 3) uses the aspirator principle with an intake and outflow manifold assembly. A set of five test tubes measuring 1 by 4 in (2.54 by 10.16 cm), mounted in easily accessible frames, should suffice for field detection use, about 10 test tubes would be more suitable for use by the high-level detection units. Each tube is fitted with a three-hole, plastic stopper. A glass tubing manifold input system is piped through one hole in the stopper to the bottom

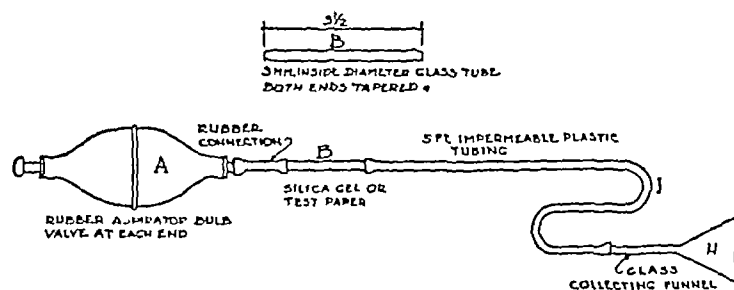


Fig 2—Bournique reaction tube apparatus

of each tube to permit the incoming gas to bubble through the test solution. The output glass tubing manifold is piped from each active tube through the second hole in the stopper with the takeoff end in each tube about $\frac{1}{2}$ in (1.27 cm) below the stopper. A short piece of plastic tubing is attached to the outside end of a piece of glass tubing that goes through the third hole in the stopper, a glass rod is used to plug the open end of this plastic tube. This glass rod is easily removed, and any additional reagent required to complete a reaction is added through the open end of the plastic tubing. All flexible tubing in this Lever apparatus should be made of Saran or Tygon. A large glass funnel is fitted to the inflow pickup tubing, and an aspirator bulb is attached to the output manifold tubing for the purpose of drawing air samples through the system. As it is impracticable to attempt to pull the gas sample through all the test tubes at one time, pinchcocks are attached to each input tube as it comes off the intake manifold at the place marked by an X in figure 3. As each test is made, the pinchcock is released while the bulb is squeezed 20 to 30 times to pull the test sample of air through the test tube. The pinchcock is then closed, and the one on the next tube is opened while air is drawn through the reagent mixture in the bottom of that tube, this procedure is repeated until all the tests have been run. Most of the high-level confirmatory tests described below can be completed in this apparatus. Reagents for the identification of phosphates and fluorides in nerve gas should go in the first two test tubes. When the test for lewisite is run, a section of glass tubing containing acetylene indicator paper must be placed between the plastic stopper and the outflow manifold assembly. Reagents for the detection of mustard and phosgene should follow in that order. Additional high-level confirmatory tests can be run in this analyzer by simply adding more test tubes, each with the appropriate solution for that particular test. A

cyanogen chloride test would be the most likely one to add next, since this war gas may give a positive reaction with some of the nerve gas test reagents, thereby causing confusion.

The Bournique apparatus (fig 4) is used when liquid test reagents are required. Only one test can be run at a time. The reagent is placed in the Pyrex flask, which can be heated if necessary. The test vessel is then closed with the aspiratory assembly, and air is passed through the liquid in the vessel by

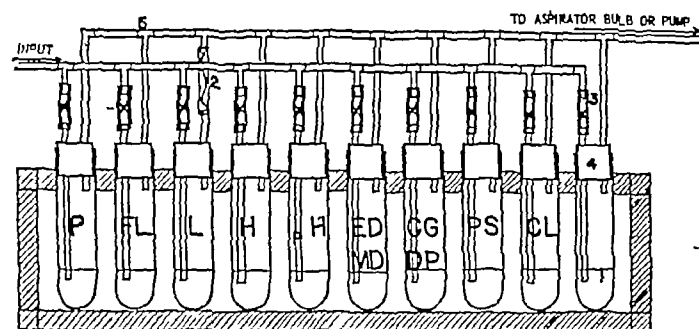


Fig 3—Aspirator unit of Lever air flow apparatus. 1, 1 in. by 4 in. test tubes; 2, cuprous paper indicator; 3, Saran tubing connectors; 4, plastic stoppers, no. 5, 5 mm L and T glass tubing; X, pinch clamps. The tubes are labeled according to the recommended sequence of tests. This apparatus may be adapted in size to field use by eliminating some of the tests.

pressing and releasing the aspirator bulb 30 to 60 times. As this is done, the entrance tube of the aspiratory assembly or the optional collecting funnel with its impermeable plastic tubing connection is held near suspicious-looking droplets or surfaces. When contamination is present the ground, bushes, and other surfaces will often have a dark, spattered appearance.

The Bournique equipment shown in figure 2 again operates as an aspiration system, but the air to be tested is now pulled through small glass reaction tubes. The tubes may contain a solid that supports the reagent used, a solid that absorbs the war agent, or a test paper impregnated with the reagent. The reaction tubes are prepared by cutting 4 mm glass tubing into 2 to 3 in (5.1 to 7.6 cm) lengths and fire-polishing at each end. A small amount of glass wool is inserted at one end and followed by the reagent, supported on a suitable solid in certain cases, by a solid adsorbent (such as silica gel) in other cases, or by strips of reagent-impregnated paper in still other instances. The exact nature of the filling used is indicated for each test below. At the other end of the reaction tube a second wad of glass wool may be inserted, if necessary. The tests are carried out by pulling air through each tube in the manner described for the apparatus in figure 4. In either case, the Bournique apparatus will give a change of color without further use of chemicals in an F test. In an H test, more reagents must be added or additional chemical operations carried out. Since the operator must be adequately protected with a gas mask and

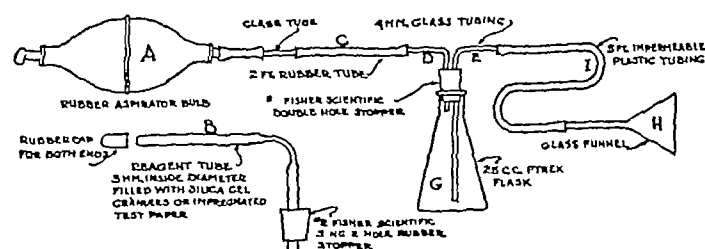


Fig 4—Bournique flask apparatus for high level tests

protective clothing, this will be difficult unless he retires to an upwind area that is free of contamination once the samples have been secured. The mask and some of the protective clothing may then be removed to facilitate additional operations. It is, therefore, wise, when preparing to do H testing, to approach an area of suspected contamination from upwind and establish a base outside of the contaminated area. Some of the bulkier equipment may be left at this point while the samples are gathered in the area of suspected contamination.

In an apparatus designed by Mr. Lever for expelling poisonous chemical agents from samples of material collected in the

field and collecting these agents for high level laboratory identification, contaminated samples are placed at the bottom of a 4 oz. (0.12 liter) bottle with a two-hole rubber stopper. By means of glass tubing connection, air is blown down through one stopper vent over or into the specimen with an aspirator bulb; the air flows through a connecting tube that extends into the absorbent material for the chemical agent, which is contained at the bottom of a test tube fitted with another two-hole stopper, one hole accommodating the connecting tube and the other, an exhaust vent. Suitable high level identification tests can then be carried out on the gas specimen concentrated in this absorbent material.

Morris B. Jacobs, Ph.D., Chief, Division of Chemical Detection, Department of Health, City of New York, has designed a chemical agents detector kit for use by the civil defense chemical officers in that city. Equipment and the detection procedures are included for the detection of mustard, phosgene, halogens, and nerve gases. The Jacobs kit may be purchased from the LaMar Laboratories, Inc., New York 10.

The various tests for the detection of chemical warfare agents will be described in the order in which testing should be carried out, the procedures for the most toxic and dangerous of the agents being given first. This order is: nerve gases such as fluorophosphates, vesicants or blister gases, choking or irritant gases, and blood gases. Details of preparation of the reagents to be used for the various tests follow the list of tests.

Detection of Fluorophosphates (Nerve Gases) Chemical warfare agents that inhibit the action of acetylcholinesterase in the body and act as nerve poisons will generally contain either fluorine or phosphorus, if not both. These agents may be detected by decomposition to either fluoride or phosphate ion and identification of these ions with suitable tests. Decomposition will generally be effected by heating with 5% sodium hydroxide solution, which results in hydrolysis to fluoride and phosphate. The tests involving such decomposition are of type H, owing to the further operations of heating and addition of reagents that are necessary.

1 Fluoride Ion Detection (H Test) Using the Bournique apparatus (fig. 4), 10 ml of 5% sodium hydroxide solution is placed in the Pyrex flask. The contaminated material is either added to the flask or sampled with the aspiratory assembly as described above. The aspiratory assembly is then removed, and the flask contents are heated with a Bunsen burner or alcohol lamp for 5 to 10 minutes. After cooling, the solution is acidified with 2N hydrochloric acid (about 6.3 ml) and is divided into two equal portions, which are placed in separate Pyrex flasks. A blank solution is prepared by adding 5 ml of the sodium hydroxide solution to another Pyrex flask. The sodium hydroxide solution is acidified with about 3.3 ml of 2N hydrochloric acid, and 2 ml of zirconium nitrate-sodium alizarinate test solution is added to it. Two milliliters of zirconium nitrate-sodium alizarinate test solution is added to one of the two equal portions of the sample solution and this is compared to the blank solution. If the sample solution shows any appreciable bleaching of color of the reagent as compared to the red color of the blank, fluoride is present.

2 Phosphate Ion Detection (H Test) To the second portion of the sample solution, 2 ml of ammonium molybdate solution is added. The Pyrex flask is shaken and allowed to stand for a few moments, 1 ml of hydroquinone reagent is added and the vessel shaken again, and finally, 1 ml of 20% sodium sulfite solution is added and the flask shaken once more. If phosphate is present, its phosphomolybdate complex will be reduced to molybdenum blue, producing an intense blue color.

The tests for fluoride and phosphate ion may also be carried out with the Lever reaction tubes (fig. 3) or the Jacobs kit. The fluoride test in the Jacobs kit is carried out by use of a reaction tube containing a strip of paper that has been impregnated with zirconium nitrate and sodium alizarinate solutions. The paper is wet with 5% sodium hydroxide solution and the usual aspiration carried out to collect a sample. The reaction tube is then heated with an alcohol lamp in such a manner as not to char the paper. Fading of the paper from pink or red to white indicates fluoride. For the phosphate test, a plain strip of filter paper is placed in the reaction tube and wet with 5% sodium hydroxide solution. The sample is taken

and the wet portion of the paper heated with the lamp as before. After cooling, 2 drops of 2N hydrochloric acid are added, followed by 1 drop of molybdate solution and 2 drops of ammonia benzidine as the reducing agent. The formation of a blue color indicates phosphate. To avoid trouble due to charring of paper in both tests, washed asbestos fiber might be used as absorbent in place of filter paper.

3 Detection of Blister Gases or Vesicants Field detection is generally feasible for agents of this class, when present in liquid form with a dye that dissolves in the liquid agent to give a distinctively colored solution. An example is Sudan red combinations which give a red color when sprinkled on a liquid vesicant agent. MK-1 detector powder turns reddish or purple when dissolved in a vesicant. Since some organic solvents, sulfuric acid, etc. also dissolve such dyes to produce colors, such detection is subject to many false results and must be confirmed by H tests. It is necessary to make at least two such tests, one for the arsenic-containing vesicants and the other for the persistent mustard and nitrogen mustard chemical agents.

4 Differentiation Between Mustard and Nitrogen Mustard (F test) The only test now available other than the chloramide-Congo red test, is one based on a change in pH. The nitrogen mustards give an alkaline reaction. As a result, air containing such materials will give a blue color indicative of a pH of 9 to 11 when aspirated over moistened universal indicator paper in glass aspiration tubes, using the Bournique reaction tube apparatus. Persistent liquid vesicants could be directly tested with dry universal indicator paper. The color obtained in a positive test for nitrogen mustards will be blue. Other vesicant gases will give an acid reaction (red color) when passed over the moistened universal indicator paper, and other persistent vesicants in liquid form will react with the dry universal indicator paper to give a red color.

5 Detection of Mustard and Nitrogen Mustard with Selenium Dioxide (H Tests) Either the Lever air-flow or the Bournique flask apparatus may be used. Two milliliters of the selenium dioxide reagent is added to the Pyrex flask, the vessel tightly attached to the aspiration assembly, and a sample taken in the usual manner. The mixture in the vessel is then warmed nearly to boiling with an alcohol lamp or Bunsen burner. If mustard gases have been collected, the selenium dioxide will be reduced to free selenium with production of a red color, however, other reducing agents, such as hydrogen sulfide and probably, the arsenical vesicants will produce the same results. This test may also be carried out with the Bournique reaction-tube apparatus. A Pyrex flask containing a mixture of calcium chloride powder and selenium dioxide is used for the aspiration technique by which the sample is gathered. Two drops of 2N hydrochloric acid are then added to the calcium chloride-selenium dioxide mixture. At this point it is advisable to heat the flask gently with the alcohol lamp or Bunsen burner although some procedures do not give such instructions. Again the production of a red color indicates the presence of mustard or nitrogen mustard.

6 Detection of Mustard and Nitrogen Mustard with Sodium Iodoplatinate Using the Bournique reaction tube apparatus, 1 drop of 5% acetic acid or of 2N hydrochloric acid is added to a reaction tube containing either silica gel or glass wool. Aspiration in the usual manner is done to obtain a sample, 3 drops of sodium iodoplatinate are added to the tube followed by 1 drop of starch solution. Mustard and nitrogen mustard will reduce the iodoplatinate with liberation of free iodine which reacts with the starch solution to give the characteristic blue starch iodide complex. Chlorine, nitrous fumes and arsenical vesicants may interfere.

7 Detection of Arsenical Vesicants (H Test) Five grams of arsenic free zinc is placed in the Bournique flask and sufficient copper sulfate solution added to cover it. After a minute the copper solution is drained off and replaced with 10 ml of water. Contaminated material is added to the flask or sampled by aspiration in the usual manner. A wad of cotton moistened with lead acetate solution is placed next to the constriction of the stoppered reagent tube then a strip of mercuric bromide or mercuric chloride paper is inserted in the tube with a little of the paper extending beyond the distal end of the tube to act as a comparison blank. The aspiration assembly is removed

from the Pyrex flask, 5 ml of concentrated hydrochloric acid added to it, and the reagent tube tightly inserted into its neck. If arsenicals are present, arsine (AsH_3) will be evolved. This substance reacts with the mercuric salt of the test paper to produce yellowish-brown to black-brown complexes. The lead acetate solution on the cotton plug preceding the test paper is for the purpose of removing hydrogen sulfide, which would react with the test paper to form black lead sulfide. If the identification of individual arsenicals is desired, further H tests must be carried out.

Differentiation of Arsenical Vesicants The following tests are all of type H but are also very simple and could probably be used virtually as F procedures.

8 Detection of Diphenylaminechlorarsine Silica gel in one of the Bournique reaction tubes is impregnated with 2 to 3 drops of concentrated sulfuric acid, or several milliliters of this acid is placed in the Pyrex flask of the Bournique flask apparatus. In either case, aspiration is done in the usual manner or the suspected liquid is added. This war agent produces a red color with the cold acid. On addition of 2 to 3 drops of 5% potassium nitrate solution the color changes to purple or blue, probably owing to an impurity, diphenylamine, which is always present in this war gas. The other arsenicals give no color with sulfuric acid, the test is confirmatory for this chlorarsine.

9 Detection of Lewisite The suspected vapor is aspirated in the usual manner through a Bournique reaction tube that contains silica gel, or suspected liquid is sucked up, (1) 2 to 3 drops of Sloat's reagent, an alkaline solution of cuprous ion, are then added. If lewisite is present it will form acetylene, and the acetylene will produce a red color by the formation of cuprous acetylide. This test is quite specific. An F procedure may be done by the insertion of a strip of filter paper moistened with the reagent in the reaction tube, followed by immediate aspiration. A red color again indicates lewisite. (2) Alternatively, the reaction tube is opened and some of the vapor-impregnated silica gel granules are permitted to drop into 1 or 2 ml of ammoniacal silver nitrate solution. If lewisite is present, the silver compound is reduced and the granules will turn black.

10 Detection of Ethyl or Methyl Dichlorarsine The suspected vapor is introduced in the Bournique reaction-tube apparatus as before, 2 to 3 drops of 5% mercurous nitrate solution are then added. Formation of a gray color within a few seconds indicates one of the above dichlorarsines. Lewisite will give a gray color after about 12 hours.

11 Detection of Diphenylcyanoarsine The procedure for identifying dichlorarsines is carried out. On addition of the mercurous nitrate, the silica gel should turn black immediately if diphenylcyanoarsine is present. Alternatively, several silica gel granules used in sampling, as above, are dropped into 1 or 2 ml of 5% mercurous nitrate solution acidified with a few drops of 0.1N nitric acid. Rapid blackening in the cold solution indicates diphenylcyanoarsine, while the more gradual development of a gray color indicates either methyl or ethyl dichlorarsine. It may be difficult to distinguish among these three agents without testing for cyanide.

Detection of Lung Irritants As no specific reagents for this class of war gases appear to be available, it is necessary to test separately for the individual lung irritants.

12 Detection of Chlorine with Aniline Hydrochloride (F Test) The Bournique tube contains aniline hydrochloride paper rolled into spirals. As suspected air is aspirated through the tube in the usual manner, a color change from white to red or blue is observed in the presence of chlorine. However, many other oxidizing agents may interfere.

13 Detection of Phosgene, Di-Phosgene, and Tri-Phosgene (F Test) The Bournique reaction tube contains a strip of filter paper that has been impregnated with 2 or 3 drops of Harrison's reagent. On aspiration in the usual manner, the paper changes from colorless to yellow in the presence of phosgene. The following substances may interfere: hydrogen chloride, bromine, chlorine, lewisite, and nitrogen dioxide. To differentiate among these gases, the same test is done substituting 2 drops of nitroso reagent for the Harrison's reagent. If phosgene alone is present a Michler's type ketone is formed that causes the paper to change in color from brown to green. The nitroso reagent is virtually

specific for phosgene. A positive test with Harrison's reagent and a negative with the nitroso reagent indicates di-phosgene and tri-phosgene but no phosgene. The nitroso reagent is rather difficult to prepare and may decompose within two or three months of preparation.

14 Detection of Chlorpicrin (H Test) (1) Nitrite reaction. 2 or 3 drops of sodium ethylate solution are added to the silica gel in a Bournique reaction tube, and aspiration is done in the usual manner. Any chlorpicrin that passes through the tube will be decomposed by the sodium ethylate with the formation of nitrite. After aspiration, 2 or 3 drops of glacial acetic acid, 1 or 2 drops of sulfanilic acid, and 1 or 2 drops of alpha-naphthylamine are added. The nitrite will diazotize the sulfanilic acid, which then couples with the alpha-naphthylamine to form a rose or pink color when chlorpicrin is present. Chloroform interferes. This test may also be carried out with the Bournique flask apparatus. With 1 or 2 ml of sodium ethylate in the Pyrex flask, aspiration is done and several drops of glacial acetic acid are added to the flask, followed by 1 ml each of sulfanilic acid and alpha-naphthylamine. The color change is as indicated above when chlorpicrin is present. (2) Test with diphenylamine sulfonate. With 1 or 2 drops of concentrated sulfuric acid on the silica gel of a Bournique reaction tube, a sample is collected as usual, 1 drop of water is added to the tube and allowed to stand for one minute, 1 drop of barium diphenylamine sulfonate reagent is added. If chlorpicrin is present, it will hydrolyze to nitrous acid, which reacts with the diphenylamine reagent to give a blue color. Oxides of nitrogen, stannic chloride, and titanium tetrachloride interfere. This test may also be carried out with the Bournique flask apparatus. With 2 or 3 ml of concentrated sulfuric acid in the Pyrex flask, aspiration is carried out in the usual manner, several drops of water are added, followed one minute later by 2 drops of barium diphenylamine sulfonate reagent. Chlorpicrin gives a blue color as before.

Detection of Systemic Poisons The two most likely agents of this type appear to be hydrogen cyanide and arsine. Tests for these materials are given below.

15 Detection of Hydrogen Cyanide (F Test) The Bournique reaction tube contains a spiral of filter paper that has been dipped into an equal mixture of copper acetate solution and benzidine acetate solution. Aspiration is done, in the presence of hydrogen cyanide, a blue color is produced on the indicator paper.

16 Detection of Arsine (F Test) This test is the same as that used for arsenical vesicants (test 7) from the point at which the latter gases have been decomposed into arsine. The test is readily carried out with the Bournique reaction tube apparatus. The tube now contains mercuric chloride or bromide paper preceded by a cotton plug moistened with lead acetate solution. The suspected vapor first passes over the lead acetate, which will remove hydrogen sulfide when present in the air sample, any arsine that is present will react with the mercuric bromide or chloride to form a yellow or brown complex on the test paper.

General Tests for Chemical Agents A number of general methods have been proposed for the detection of war agents. Some of these are quite elaborate and depend on combustion procedures that decompose the war gas into easily recognized products, others depend on simpler techniques. The two most readily applied simple procedures follow.

17 pH Test for War Gases (F Test) This test depends on the acid or alkaline reactions given by various chemical agents as they decompose by hydrolysis to form free acids and bases. In some cases it is only necessary to touch suspected liquid with a piece of universal pH paper. In other cases the aspiration of suspected vapor through a solution of universal pH indicator in a Lever test tube or a Bournique flask may be more effective. Substances that hydrolyze to give an acid reaction include mustard, phosgene, and cyanogen chloride. These will produce a red color with the indicator. As already mentioned, nitrogen mustards will give an alkaline reaction and have a blue color.

18 Beilstein Test for War Gases (F Test) A copper wire heated in a flame such as that of an alcohol lamp will give a green flame if a war gas containing halogen or cyanide is present in the atmosphere surrounding the lamp. The wire must be heated in halogen-free air until green color is absent from the flame before making the test.

Reagents—Directions follow for the preparation of the various reagents that are used in the tests described above

Reagents for the Fluoride Test (test 1) (1) Sodium hydroxide 5% dissolve 5 gm of solid sodium hydroxide in 100 ml of water (2) 2N hydrochloric acid dilute the concentrated acid with 5 vol of water to each volume of acid (3) Zirconium nitrate-sodium alizarinate solution dissolve 0.87 gm of zirconium nitrate [$\text{Zr}(\text{NO}_3)_2 \cdot 5\text{H}_2\text{O}$] in 100 ml of water Dissolve 0.17 gm. of sodium alizarinate in 100 ml of water Mix equal portions of the two solutions just prior to use (4) Zirconium nitrate-sodium alizarinate test paper the solutions of each of the reagents are prepared, as above, just before use Place the zirconium nitrate solution in one evaporating dish and the sodium alizarinate solution in another Circles of filter paper are first placed in the sodium alizarinate solution for a few seconds and then dipped into the zirconium nitrate solution After drying, the paper is cut into strips 2 in (5.08 cm) long and about $\frac{1}{4}$ in (0.64 cm.) wide The strips are rolled into spirals, and one strip is inserted into each end of a reaction tube At one end of the tube the paper is pushed back about $\frac{1}{2}$ in to permit the addition of liquid reagents

Reagents for the Phosphate Test (test 2) (1) Ammonium molybdate solution (Bournique) dissolve 25 gm of ammonium molybdate in 300 ml of water Dilute 75 ml of concentrated sulfuric acid to 200 ml with distilled water and add to the molybdate solution (2) Ammonium molybdate solution (Jacobs) dissolve 40 gm of ammonium molybdate in 100 ml of water (3) Hydroquinone solution dissolve 0.5 gm of hydroquinone in 100 ml of water and add a drop of concentrated sulfuric acid to retard oxidation (4) Ammonia benzidine solution dissolve 0.05 gm of benzidine or benzidine hydrochloride in 10 ml of concentrated acetic acid and dilute with water to 100 ml Add 7 ml of concentrated ammonium hydroxide solution to 21 ml of the benzidine solution

Reagent for Nitrogen Mustard Test (test 4) Universal pH indicator solution or paper may be obtained from virtually any chemical supply house

Reagents for Mustard Gas Test (test 5) (1) Selenium dioxide-calcium chloride reaction tubes mix, preferably by thoroughly grinding in a mortar with a pestle, 5 gm of selenium dioxide with 20 gm of powdered anhydrous calcium chloride Fill reaction tubes to a length of about 1 to $1\frac{1}{2}$ in (2.54 to 3.81 cm) with this mixture, using glass wool to close each end This is the mustard gas reagent used in the Jacobs kit. (2) 5% sodium nitrate solution dissolve 5 gm of the salt in 100 ml of water

Reagents for Mustard Gas Test (test 6) (1) Sodium iodoplatinate solution add 1 ml of a 5% platinum chloride solution to 53 ml of a 5% solution of sodium iodide Dilute to 180 ml with water (2) Starch solution mix about 1 gm of soluble starch with 4 to 6 ml of water until a paste is formed Add 200 ml. of boiling water and stir thoroughly Cool and add 2 drops of toluene as a preservative (3) 2N hydrochloric acid see reagents for test 1 (4) 5% acetic acid dilute 5 ml. of glacial acetic acid with 95 ml of water

Reagents for the Arsenical Test (test 7) (1) Concentrated hydrochloric acid (2) Arsenic free zinc shot. (3) Copper sulfate solution dissolve 5 gm of the pure hydrate in 100 ml of water (4) Lead acetate solution dissolve 5 gm of the pure salt in 100 ml of water (5) Mercuric chloride or mercuric bromide paper dissolve 10 gm of mercuric chloride or mercuric bromide in 100 ml of water, immerse a circle of Whatman filter paper no. 40 in the solution, allow to dry, and cut into strips The mercuric chloride and mercuric bromide paper may also be purchased from a supply house

Reagents for Detection of Lewisite (test 9) (1) Sloot's reagent dissolve 10 gm of sodium hydroxide in 50 ml of water Add to this solution 4 gm of arsenic trioxide and stir until it is in solution Prepare a second solution of 0.4 gm of copper acetate dihydrate [$\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot \text{H}_2\text{O}$] in 10 ml of water Heat both solutions to 85 C, and add the copper solution to the arsenic trioxide solution with constant stirring Cool the mixture rapidly in cold water, the orange precipitate should now dissolve, and the solution may be diluted with 40 ml of water to a final volume of 100 ml (2) Ammoniacal silver nitrate

solution dilute concentrated ammonium hydroxide 1 l with water and add this, drop by drop, to 10 ml of a silver nitrate solution containing 5 gm of the salt per 100 ml of water until the precipitate that first forms is completely dissolved.

Reagent for Detection of Ethyl or Methyl Dichlorarsine and Diphenylcyanoarsine (tests 10 and 11) 5% mercurous nitrate solution this reagent should be freshly prepared by dissolving 5 gm of the pure salt in 100 ml of water

Reagents for Phosgene Tests (test 13) (1) Harrison's reagent. dissolve 5 gm. of *p*-dimethylaminobenzaldehyde and 5 gm of colorless diphenylamine each in 50 ml of carbon tetrachloride. Combine the two solutions immediately and dip filter paper into the mixture The filter paper is allowed to dry and is cut into thin strips which are stored in a tightly-sealed, brown, dry bottle For use, one or two strips may be twisted into a spiral and pushed into an empty reaction tube, or the strips may be directly exposed to the suspected air (2) Nitroso reagent. it is first necessary that 1,2,4-nitrosodiethylaminophenol be prepared, 0.5 gm of *m*-diethylaminophenol (obtainable from Eastman Kodak Co) is dissolved in 15 ml of water containing 1 ml of concentrated hydrochloric acid The solution must be cooled to 0 C before use Sodium nitrite, 0.22 gm, is dissolved in 5 ml of water and added to the first solution with an eyedropper while the temperature is constantly maintained at 0 C The addition should require 20 minutes The mixture is then made nearly neutral by the addition of a solution of 2 gm of sodium acetate in 5 ml of water, after which it is extracted with 50 ml of benzene After it separates the benzene layer is filtered through a dry filter paper The final reagent is prepared by mixing equal portions of the filtered benzene layer and a solution of 0.2 gm of *m*-diethylaminophenol in 50 ml of benzene The reagent is kept tightly stoppered in a brown bottle For use, 2 or 3 drops are added to a twisted strip of filter paper pushed into an empty reaction tube The reagent is unstable and must be renewed about every three months

Reagents for the Chlorpicrin Test (test 14) (1) Sodium ethylate solution dissolve 3 gm of sodium in 100 ml of ethyl alcohol (2) Sulfanilic acid solution dissolve 1 gm of sulfanilic acid in hot water, cool, and dilute to 100 ml (3) Alpha naphthylamine hydrochloride solution boil 0.5 gm of this substance in 100 ml of water for 10 minutes Add water to keep the volume essentially constant during the boiling period (4) Barium diphenylamine sulfonate solution dissolve 2 gm of this material in 100 ml of water If on standing a blue color develops, a fresh solution must be prepared

Reagents for the Hydrogen Cyanide Test (test 15) (1) Cupric acetate solution dissolve 2.86 gm of copper acetate dihydrate in water and dilute to 1 liter (2) Benzidine acetate solution place an excess of benzidine acetate in 475 ml of water Shake or stir until the solution is saturated Filter and dilute to 1 liter with 525 ml of distilled water (3) Impregnated paper strips of filter paper 3 to 4 mm wide should be dipped in an equal mixture of the above two solutions just before sampling is done

Reagents for the Arsine Test (test 16) See above, reagents for test 7

COMMENT

The procedures described above will probably permit the satisfactory detection of any one of the war gases if only that agent is present In the case of certain mixtures of gases satisfactory results may still be obtained With very complicated mixtures this may no longer be the case It is not very likely that extremely complicated mixtures would be used, but the possibility cannot be discounted Moreover many other agents have been proposed as war gases concerning which little is known Should some of these prove especially potent and be adapted to wartime use, it is probable that the tests that have been given would prove inadequate As a result, the scheme proposed here can be regarded only as a tentative one that might be subject to radical revision in the event of actual hostilities Civil defense might then depend on the release of adequate procedures for detection by the armed forces Another alternative would be the study of this problem of a satisfactory scheme for detection of war gases by a suitable national organization It is probably too large a problem to be adequately treated by any one state civil defense group

MEDICAL NEWS

ARKANSAS

Society News—Dr Columbus R Ellis, Malvern, recently became president of the Arkansas Academy of General Practice, Dr Benjamin N Saltzman, Mountain Home, was made president-elect, and Dr Clifton C Long, Ozark, was reelected secretary-treasurer—Newly elected officers of the Arkansas Obstetrical and Gynecological Society include Dr Charles P Wickard, Little Rock, president, Dr John W Jones, Texarkana, vice-president, and Dr J F Kelsey, Fort Smith, secretary

Personal—Dr Fount Richardson, 316 W Dickson, Fayetteville, has been named editor of the *Journal of the Arkansas Medical Society*, succeeding Dr William R Brooksher, who resigned after 20 years of service—Dr William King Jordan, Little Rock, head of the department of neurology, University of Arkansas School of Medicine, took part in the International Neurochemical Symposium held in Oxford University, England, during July

Rockefeller Rural Survey—The Arkansas Medical Society has appointed the following physicians as an advisory committee to work with the University of Arkansas School of Medicine, Little Rock, on the Rockefeller plan for a study of Arkansas rural health facilities: chairman, Louis K Hundley, Pine Bluff, who is chairman of the society's council, William R Brooksher, Fort Smith, president of the society, James M Kolb, Clarksville, Fount Richardson, Fayetteville, Benjamin N Saltzman, Mountain Home, and Henry W Thomas, Dermott. The study, to be financed by Mr Winthrop Rockefeller, who proposed the plan, will include the establishment of a pilot clinic

CALIFORNIA

Town Honors Physicians—A new elementary school in Turlock is to bear the name of two of the town's family physicians, Drs Albert E and Eric A Juhen, aged 73 and 71 years, respectively, chosen because they have "given unstintingly of their time to help others"

Public Relations Director—In a move to strengthen its public relations program, the Los Angeles County Medical Association appointed Jerry Pettis, former associate director of public relations for the California Medical Association, as executive assistant to the president. Mr Pettis, who served as assistant to the president of United Air Lines before joining the state medical organization, is the founder of *Audio-Digest* (THE JOURNAL, March 20, 1954, page 1007, June 2, 1954, page 73), a nonprofit C M A subsidiary that he serves as executive vice-president

Postgraduate Surgical Clinics—Starting Sept 14, 8 to 10 p m, and continuing for six weeks at weekly intervals, postgraduate surgical clinics will be given at Fort Miley by the department of surgery of the Veterans Administration Hospital and Stanford University School of Medicine, San Francisco. Members of the American Academy of General Practice will receive 12 hours' education credit. Nonmembers are invited to attend on payment of the registration fee. Interns and resident staffs of the Bay Area hospitals are welcome to attend without fee but must register. Dr Forrest M Willett, chief of medical service at Fort Miley and associate professor of medicine at Stanford, will be coordinator of the program, and Dr Louis G Brizzolara, chief of surgical service at Fort Miley and assistant clinical professor of surgery at the University of California School of Medicine, San Francisco, will act as moderator. Those wishing to obtain program and registration forms should contact Dr Alexander F Fraser, program chairman, 3004 16th St, San Francisco, HEml-ock 1-0388, or the office of the California Academy of General Practice, 461 Market St, San Francisco, YUkin 2-2329

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

GEORGIA

Dr Russell Oppenheimer Retires—Dr Russell H Oppenheimer, who for the past 33 years has been associated with the Emory University School of Medicine, Emory University, retired as professor of medicine and director of postgraduate education at Emory Aug 31. He has been dean of the medical school for 20 years and superintendent of the university hospital for 13 years. He served with the Army in World War I and, after a period of private practice in Detroit, joined the staff of Grady Memorial hospital in Atlanta as the first resident physician in the Emory University division in 1921. Dr Oppenheimer has been a leader in medical-civic affairs. When Battle Hill Haven, a home for the aged and chronically ill, opened in Atlanta, he volunteered to supervise the medical care of patients without compensation. He has also served on the board of trustees of the Atlanta Tuberculosis Association and on the medical committee of the Social Planning Council. Dr Oppenheimer is an honorary member of Phi Rho Sigma and Alpha Omega Alpha societies. He plans to make his home with his sister, Mrs Eleanor M Bronson, in Jacksonville, Fla.

IDAHO

State Medical Election—Newly elected officers of the Idaho State Medical Association include Drs Alexander Barclay Jr, Coeur d'Alene, president, Robert S McKean, Boise, president-elect, and Quentin W Mack, Boise, secretary-treasurer. The next annual meeting will be held at Sun Valley, June 19 to 22, 1955.

ILLINOIS

Society News—Newly elected officers of the Illinois Psychiatric Society include Dr Percival Bailey, Chicago, president, Dr Franz G Alexander, Chicago, vice-president, and Dr Alex J Arrieff, Chicago, secretary-treasurer.

Chicago

Cancer Fellowship Established—The Bertha Gerber Memorial Cancer League, of which Dr Adolph A Smolen is president, has established the Bertha Gerber Memorial Cancer League fellowship at the Chicago Medical School with a grant of \$3,000 for the present year. The money is to be used to support a young scientist engaged in cancer research in the department of oncology under Philippe Shubik, Ph D, director.

Institute on Rheumatic Fever—La Rabida Sanitarium, Chicago, announces an institute on rheumatic fever and rheumatic heart disease, Oct 11 to 15, directed primarily to the general practitioner or family physician and to nurses, medical social workers, occupational therapists, dentists, and others with a similar interest. The last day will be devoted to a scientific program, concluding with the Robert A Black lecture on rheumatic fever. Advance registration will be required for those who wish to attend the entire five day session. Visitors to individual sessions will be admitted by card on previous application. Information will be supplied by circular on application to Institute, La Rabida Sanitarium, E 65th St and South Shore Dr, Chicago 49.

MARYLAND

Alvarenga Prize Awarded—The College of Physicians of Philadelphia on July 14 awarded the Alvarenga prize for 1954 to Dr DeWitt Stetten Jr, associate director in charge of research, National Institute of Arthritis and Metabolic Diseases, Bethesda, for contributions to the knowledge of metabolic diseases. The Alvarenga prize was established by the will of Pedro Francisco DaCosta Alvarenga of Lisbon, Portugal, an associate fellow of the College of Physicians of Philadelphia, to be awarded annually by the College of Physicians on the anniversary of the death of the testator, July 14, 1883.

Personal.—An honorary doctor of science degree has been conferred on Charles W Shilling, Captain, M C, U S N, senior medical officer of the U S Naval Academy, Annapolis, by Taylor University of Upland, Ind., because of his scientific contributions to the field of military medicine. Captain Shilling's primary interest has been in the field of submarine medicine and deep sea diving. In 1939 his knowledge was put to use as the senior medical officer in charge of the rescue of the crew of the stricken submarine USS Squalus.—Dr Charles R Hayman, Bel Air, who has been serving as deputy state and county health officer since 1949, has gone to Juneau, Alaska, to assume his duties as deputy commissioner of health and chief of the medical services section. Alaska Department of Health.

MICHIGAN

Dr Kennedy Honored—A testimonial dinner in honor of Dr Robert B Kennedy, associate professor of obstetrics, Wayne University College of Medicine, Detroit, held in Detroit, June 30, was attended by over 225 friends, fellow physicians, and their wives and was sponsored by Dr Kennedy's former residents, who trained under him while he was chief of the department of obstetrics at Woman's Hospital and St Joseph Mercy Hospital in Detroit. Dr Carl F Shelton was chairman of the dinner. Drs William E Johnston of Woman's Hospital and John P Hubbard Jr of St Joseph Mercy Hospital were the toastmasters. Dr Charles S Stevenson represented Wayne University. A scroll from the mayor of Detroit and the key to the city were presented to Dr and Mrs Kennedy.

MINNESOTA

Society News.—The Minnesota Academy of Occupational Medicine and Surgery, which was organized Oct. 1, 1953, held its first annual meeting May 26 at the Minneapolis Athletic Club. Dr John F Shronts, Minneapolis, was named president. Dr Leslie W Foker, Minneapolis, vice president. Dr James R Fox, Minneapolis, secretary, Dr Tracy E Barber, Austin, treasurer, and Dr Gordon C MacRae, Duluth, recorder.

Pediatric Reunion to Honor Dr McQuarrie—A pediatrics reunion at the University of Minnesota, Minneapolis will be held in conjunction with the annual Northwestern Pediatric Society meeting Sept 23 to 25, in honor of Dr Irvine McQuarrie, head, department of pediatrics, who has given 25 years of service to the university. Lectures will be delivered at the meeting by 22 academic leaders in the field of pediatrics, most of whom received their pediatric training under Dr McQuarrie. As an additional tribute, a McQuarrie Pediatrics Fund has been established with a goal of \$50,000. The annual income will be used to provide a lectureship in pediatrics, a scientific travel fund for pediatrics staff members to attend special conferences, fellowships in unusual circumstances, and equipment that may be needed from time to time by the department, and for any other purpose within the department as approved by the committee. Before coming to Minnesota, Dr McQuarrie served on staffs of the University of California Medical School, Berkeley-San Francisco, Henry Ford Hospital, Detroit, Yale University, New Haven, Conn., and the University of Rochester (N Y) School of Medicine and Dentistry. Dr McQuarrie is editor in chief of Brennemann's Practice of Pediatrics.

NEBRASKA

Narcotic Violation—Dr Charles Wells Neill, South Sioux City was found guilty of having violated federal narcotic laws and on June 30 was sentenced to serve a term of one year and one day.

Crippled Children's Clinics—The following clinics have been scheduled for crippled children:

Sept. 11 Broken Bow High School
Sept. 25 Lexington High School
Oct. 9 O'Neill High School
Oct. 23 Wayne Benthack Hospital.

NEW JERSEY

Society News.—Dr Richard B Cattell, director, Lahey Clinic, Boston, will be the guest speaker at the installation dinner of the Passaic County Medical Society, Sept 15 at the Alexander Hamilton Hotel in Passaic. His subject will be "Surgical Diseases of the Pancreas".—At the recent annual meeting of the Radiological Society of New Jersey the following officers were elected: Dr Nicholas G Demy, Plainfield, president; Dr Solomon Silvera, Jersey City vice president; Dr Carye-Belle Henle, Newark, secretary, and Dr Leonard S Ellenbogen, Atlantic City, treasurer.

NEW MEXICO

State Medical Election—At the annual meeting of the New Mexico Medical Society the following officers were elected: Drs John F Conway, Clovis, president; Stuart W Adler, Albuquerque, president-elect; Earl L. Malone, Roswell, vice-president, and Lewis M Overton, Albuquerque, secretary treasurer.

NEW YORK

"Operation Ragweed"—The major phase of "Operation Ragweed" was recently completed in Sullivan County in a county-wide drive jointly sponsored by the board of supervisors and the Sullivan County Hotel Association. Specially equipped motor trucks sprayed 3,560 miles of state, county, and town roadside with 100,000 gallons of pollen-killing chemicals. Spray equipment was fitted with floodlights to facilitate night operation during the week long effort.

University News.—State University of New York College of Medicine at Syracuse announces the following promotions from assistant professor to associate professor of pathology, Drs John T Prior and Martin F Hilfinger Jr, from clinical assistant professor to clinical associate professor of medicine, Dr William G Woodin, and from instructor to assistant professor, Dr Barbara R Rennick (physiology), Dr Francis S Calva (medicine), Dr William H Bergstrom (pediatrics), and Dr Harold B Houser (medicine).—Dr Leonard D Fenninger, formerly chief of the section of general medicine of the National Cancer Institute, Bethesda, Md, has been appointed assistant dean and assistant professor of medicine at his alma mater, the University of Rochester School of Medicine and Dentistry, where from 1947 to 1952 he was a fellow in cancer research and an instructor in medicine. During 1952 and 1953, Dr Fenninger was a U S Public Health Service surgeon.

Society News.—The New York Rheumatism Association recently elected Dr Robert L Preston, president, Dr Mortimer E Ehrlich, vice-president, and Dr Bernard Rogoff, secretary treasurer (reelected).

Foreign Guests on Cardiology Program.—The scientific session of the New York Heart Association, Inc., Sept. 21, 8 30 p m, will be held in Hosack Hall, New York Academy of Medicine Building 2 E 103rd St. Total and Local Blood Volumes in Congestive Heart Failure" will be presented by Dr Gustave Nylin, Stockholm Sweden, and "Surgery of Acquired and Congenital Heart Disease" by Dr Russell C Brock, London, England.

New York City

Courses on Physical Therapy.—The Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, and the New York University School of Education are again offering (Nov 22 to Dec 17, Feb 7 to March 4 1955, May 2 to May 27) a four week advanced course in physical rehabilitation methods with four points of university credit. Tuition fee is \$80, registration fee \$8. Qualified veterans may enroll in the course under the provision of P L 346 or P L 16. The course, which will cover (1) severe disabilities and their rehabilitation (2) skills and methods of functional activities and (3) clinical experience is open to certified physical therapists who have the approval of the curriculum director. Applications and requests for information may be submitted to Mrs Edith

Buchwald Lawton, Director of Rehabilitation Courses for Physical Therapists, Institute of Physical Medicine and Rehabilitation, 400 E. 34th St., New York 16

NORTH CAROLINA

Personal—Dr. Francis Bayard Carter, professor of obstetrics and gynecology, Duke University School of Medicine, Durham, has been named an honorary fellow of the Society of Obstetricians and Gynecologists of Canada. Dr. Carter is president of the American Academy of Obstetrics and Gynecology and past president of the South Atlantic Obstetrical and Gynecological Society. At Duke's 102nd commencement in June, he became the third faculty recipient of the Algernon Sydney Sullivan award. The President's Committee on Employment of the Physically Handicapped has bestowed awards on Dr. Oscar Lee Miller, Charlotte, and Dr. William M. Roberts, Gastonia.

Physicians Address Foreign Societies—Dr. R. Wayne Rundles and Dr. Samuel P. Martin III, associate professors of medicine at Duke Hospital and Duke University School of Medicine, Durham, will address the International Congress of Hematology at Paris, France, Sept. 10. Dr. Martin will discuss "Leukocyte Metabolism" and Dr. Rundles, "Abnormal Proteins in Malignant Blood Disease." Dr. Martin, one of Duke's seven Markle scholars, also will address a symposium in London, Oct. 8, sponsored by the Ciba Foundation, discussing "Metabolic Response to Infection." He will visit medical schools in Belgium, France, Switzerland, Germany, Denmark, Sweden, and England before returning to Duke, Oct. 18. Dr. Rundles will visit the Royal Cancer Society and other blood laboratories in London and Paris as well as protein laboratories in Sweden before his return late in September. A member of the Duke staff since 1945, Dr. Rundles is the author of numerous articles on neuroanatomy, diabetes, and blood diseases.

SOUTH CAROLINA

Personal—For outstanding service to the community of Greenwood, Dr. Clough H. Blake has been awarded the Rotary Club's "Man of the Year" plaque. Dr. Rudolph Farmer, assistant superintendent and medical director of the South Carolina Sanatorium, State Park, has been appointed superintendent to succeed Col. William H. Moncrief, who recently resigned.

Pediatricians Meet in Columbia—The South Carolina Pediatric Society will meet Sept. 13 and 14 in Columbia. At the Monday meeting, a joint session with the Columbia Medical Society at 7 p. m., Dr. Clifford G. Grulee Jr., associate professor of pediatrics, Tulane University of Louisiana School of Medicine, New Orleans, will present "The Diagnosis and Treatment of Diphtheria—A Continuing Pediatric Problem" and Dr. Harry B. O'Rear, professor of pediatrics, University of Georgia School of Medicine, Augusta, "Treatment of Meningococcal Infections in Children." The Tuesday session will begin at 11 a. m. Dr. Grulee will discuss "Infectious Hepatitis in Children," and Dr. O'Rear will have as his topic "Cat Scratch Disease."

Dr. Peeples Named State Health Officer—Dr. George S. T. Peeples, Columbia, assistant health officer and director of local health services for the state board of health, was recently appointed state health officer to succeed the late Dr. Benjamin F. Wyman. Dr. Peeples, a county health officer in Horry and Dillon counties in 1926 and 1927, becoming assistant director of local health services in 1935, was appointed director of the division of crippled children in 1942 and in 1949 was named local health services director. He received the degree of master of public health from Harvard University in 1937. During World War II he was commissioned a surgeon by the U. S. Public Health Service. He is a former president of the State Public Health Association. Dr. Clarence L. Guyton, Columbia, has been appointed assistant health officer.

TENNESSEE

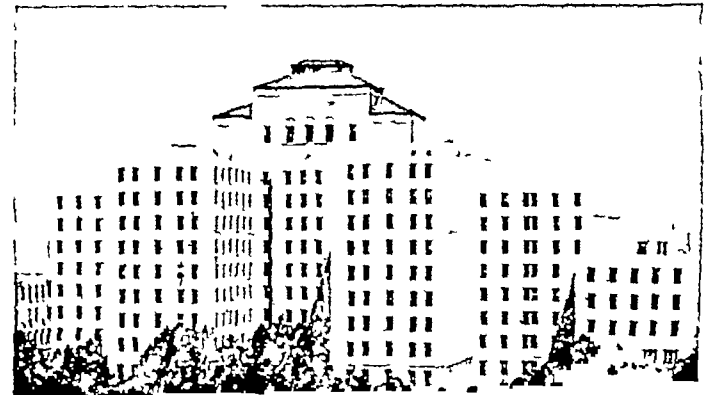
Society News—Newly elected officers of the Tennessee Radiological Society are Dr. J. Marsh Frere, Chattanooga, president, Dr. John M. Wilson, Memphis, vice-president, and Dr. George K. Henshall, Chattanooga, secretary-treasurer.

Dr. Raines Named Department Head—Dr. Samuel L. Raines, assistant professor in the department of urological surgery at his alma mater, the University of Tennessee College of Medicine, Memphis, has been advanced to professor and named head of the department. Dr. Raines has been a member of the college of medicine staff since 1929. He succeeds Dr. Thomas D. Moore, who has resigned as head of the department.

TEXAS

Course in Electrocardiology—A course in practical electrocardiology will be presented, Dec. 6 to 10, at the University of Texas Postgraduate School of Medicine, Houston, with the co-sponsorship of Baylor University College of Medicine and the Houston Heart Association. Dr. Demetrio Sodi-Pallares, chief of the department of electrocardiology, National Institute of Cardiology of Mexico City, will be guest lecturer each evening from 7:30 to 10 p. m. During the daytime hours, registrants will be invited to attend the various hospitals in the Texas Medical Center during periods when routine hospital tracings are being read by the hospital electrocardiologists. In addition, registrants in smaller groups will be given individualized instruction in interpretation of specific tracings by various members of the faculties of both schools. The course, which includes adult and pediatric electrocardiology, is primarily designed to acquaint general practitioners as well as internists with practical aspects of electrocardiology, with emphasis on those tracings commonly encountered in practice. Further inquiry and advance registration may be made through the University of Texas Postgraduate School of Medicine (telephone LI-6986).

The New John Sealy Hospital—This hospital, recently dedicated at the University of Texas Medical Branch, Galveston, together with the R. Waverley Smith Memorial Pavilion, covers some



John Sealy Hospital

what over 10 acres. The entire building, with the exception of the pavilion, is dedicated to the functions of a teaching hospital. The operating department, which serves the entire hospital, is designed in a "radial" pattern. A circumferential corridor circling this operating complex provides a "front" entrance to the operating, scrub-up, and anesthesia rooms as well as the spectators' galleries, of which every major room has one. Among other special facilities are a fever therapy suite of two treatment and two rest rooms, separate suites for electrocardiography and basal metabolism, each accommodating three patients simultaneously, a blood bank with a five place donors' room, and a processing laboratory. The total construction cost of the hospital exceeded 11 million dollars, about 9 million of which was contributed by the Sealy and Smith Foundation for the John Sealy Hospital.

WASHINGTON

Annual Alfred Strauss Lecture—The department of surgery, University of Washington School of Medicine, Seattle, will again sponsor the annual Alfred A. Strauss lecture, which will be presented by Dr. Lester R. Dragstedt, chairman, department of surgery, University of Chicago School of Medicine, on Oct. 22 at 8:15 p. m. in the auditorium of the Health Sciences Building, University of Washington campus. Dr. Dragstedt will discuss "Etiology of Gastric and Duodenal Ulcer." Dr. Dragstedt was previously affiliated with the physiology and pharmacology

departments of the State University of Iowa and served as Nathan Smith Davis professor of physiology and pharmacology and head of the department at Northwestern University Medical School. He received the A M A silver medal in 1947 for his work on vagotomy in the treatment of peptic ulcer and the A M A gold medal in 1950 for his exhibit on quantitative studies on mechanisms of gastric secretion. Physicians, medical students, nurses, and others working with the medical profession are welcome to attend the Strauss lecture.

WEST VIRGINIA

Hospital News—Morris Memorial Hospital for Crippled Children at Milton has received an endowment of \$10,000 in U S treasury bonds. The gift was made by Arthur B Koontz, Charleston, on behalf of the estate of his late brother, Patrick B Koontz.

Society News—Dr Edith L. Potter, associate professor of pathology, University of Chicago School of Medicine, and pathologist at the Chicago Lying-In Hospital, will be the guest speaker at the meeting of Kanawha Medical Society, Sept 14, in the evening. The speaker will discuss Perinatal Morbidity and Foetal Salvage and will lead a round table discussion at Memorial Hospital in Charleston at 4 p m. Members of all other component societies in the state are invited to this opening meeting of the fall season.

Rural Health Conference.—The seventh annual Rural Health Conference, sponsored by the West Virginia State Medical Association, was held in the Century of Progress Hall at Jackson's Mill, Sept 2, under the auspices of the public relations committee, with the cooperation of the West Virginia Farm Bureau, the agricultural extension division of West Virginia University, and the state department of health. Dr Charles E. Staats, Charleston, chairman, public relations committee, presided as moderator. After an address of welcome by Dr Russel Kessel, Charleston, president of the state medical association, Mrs Dean Johnson, Buckhannon, president of the Farm Women's Council, presented "Health Problems of Rural People," and Mr Edgar F. Fisher Jr, Richmond, director, Virginia Council on Health and Medical Care, discussed the part rural groups have played in assuring the success of the program of his organization in Virginia. At the morning session Dr Carl S. Mundy, Toledo, Ohio, vice-chairman of the A M A Council on Rural Health, presented "Roads to Rural Health." The afternoon meeting was devoted to discussion by separate groups on nutrition, medical and hospital service plans, nursing problems, prevention and control of disease, and medical care in rural areas. Physicians who served as moderators included Dr Newman H. Dyer, Charleston, state director of health, and Dr William L. Cooke, Charleston, past president, Kanawha Medical Society. An invitation to attend the meeting was extended to members of farm groups. The West Virginia State Medical Association was host at a luncheon in the Mt. Vernon dining hall.

WISCONSIN

Bronze Bust of Dr Schweitzer—A bronze bust of Dr Albert Schweitzer, the gift of a group of hospital staff members and other Wisconsin residents to the University of Wisconsin, was recently unveiled in the lobby of the University Hospitals, Madison. The plaque on the bust reads: "Versatile scholar in theology and philosophy. Distinguished contemporary interpreter of Bach. Founder and for 40 years missionary surgeon of the hospital at Lambaré, French Equatorial Africa. By his surpassing achievements in the service of God and his fellowmen Dr Schweitzer has pointed the way to a full life in medicine. In his example the weak will find strength and the stalwart renewed courage and resolution." Among those participating in the unveiling were Dr William S. Middleton, dean of the medical school, University of Wisconsin, president Edwin B. Fred, and Dr Noel A. Gillespie, associate in anesthesiology at University Hospitals, who, 30 years ago, worked with Dr Schweitzer at Lambaré. In accepting the bust, President Fred said Dr Schweitzer "has carved from the jungle a remarkable oasis for the Africans among whom he has lived for the past 41 years."

He has saved thousands of lives with none of the appurtenances modern doctors find indispensable. It is especially fitting that it be placed here, where lives are saved every day by dedicated men where young men are trained by precept and example to dedicate themselves to the saving of lives in the future."

GENERAL

Meeting on Pharmacology and Experimental Therapeutics—The interim meeting of the American Society for Pharmacology and Experimental Therapeutics will be held at Charlottesville, Va., Sept 6 to 8, under the joint sponsorship of the University of Virginia School of Medicine, Charlottesville, and the Medical College of Virginia, Richmond. On Monday at 1:30 p m there will be a panel discussion on graduate education in pharmacology and on Tuesday at 9:15 a m, a panel discussion on the cellular localization of drugs and drug effects. In all 151 additional presentations have been scheduled, and 16 papers will be read by title. The pharmacology dinner will be held Tuesday, 7 p m, in the gymnasium.

Fellowships for Research in Arthritis—The Arthritis and Rheumatism Foundation is offering the following research fellowships in the basic sciences related to arthritis:

1. Predoctoral fellowships ranging from \$1,500 to \$3,000 per annum depending on the family responsibilities of the fellow tenable for one year with prospect of renewal.
2. Postdoctoral fellowships ranging from \$4,000 to \$6,000 per annum depending on family responsibilities tenable for one year with prospect of renewal.
3. Senior fellowships for more experienced investigators carrying an award of \$6,000 to \$7,500 per annum, tenable for five years.

The deadline for applications is Oct. 15. Applications will be reviewed and awards made in January, 1955. Information may be had from the Medical Director, The Arthritis and Rheumatism Foundation, 23 W. 45th St., New York 36.

Interim American Board of Occupational Medicine.—This board is negotiating with the American Board of Preventive Medicine relative to the grouping of occupational medicine with other nationally recognized professional specialties in the general field of preventive medicine. For purposes of organization, it is desirable to know the number of candidates likely to apply for certification in occupational medicine under such auspices. Interested physicians are invited to communicate with Dr Carl M. Peterson, Secretary, Interim American Board of Occupational Medicine, 535 N. Dearborn St., Chicago 10. Application forms and other essential information will be sent to inquirers as negotiations proceed. Full instructions will include regulations governing basic eligibility, admission to certification without examination, examination procedure, fees, and other details.

Cerebral Palsy Institutes—The national office of United Cerebral Palsy and its affiliates throughout the country have scheduled eight program institutes in September and October. Each institute will start on Thursday noon and extend through Friday evening, immediately preceding regional conventions in each area. The institutes and conventions have been scheduled as follows:

- Sept. 2-5 Pacific Region: St. Francis Hotel, San Francisco.
- Sept. 9-12 Midwest Region: Hotel Muchlebach, Kansas City, Mo.
- Sept. 16-19 Central Region: Hotel Cleveland, Cleveland.
- Sept. 23-26 New England Region: Statler Hotel, Boston.
- Sept. 30-Oct. 3 Eastern Region: Benjamin Franklin Hotel, Philadelphia.
- Oct. 7-10 Southeast Region: Heidelberg Hotel, Jackson, Miss.
- Oct. 14-17 Southwest Region: Roosevelt Hotel, New Orleans.
- Oct. 21-24 Southern Region: John Marshall Hotel, Richmond, Va.

A summary of the program institute discussions will be presented on Saturday afternoon. On Saturday evening the guest speaker will discuss "Legislation for the Physically Handicapped." The U C P 1954 annual convention is scheduled to be held at the Mayflower Hotel in Washington, D C, Nov. 19 to 21.

Meeting of Physiologists.—The sixth annual fall meeting of the American Physiological Society will be held at the University of Wisconsin, Madison, Sept. 8 to 10, when 272 papers will be presented. Session chairmen will include Dr Herbert S. Gasser, until recently director of the Rockefeller Institute for Medical Research, New York, and Dr Carl J. Wiggers, editor of *Circulation Research*, formerly head of the department of physiology.

ology at Western Reserve University School of Medicine, Cleveland On Sept 6 and 7, (1) a refresher course in the physiology of respiration will be conducted by Dr Julius H Comroe Jr , professor of physiology and pharmacology at the University of Pennsylvania Graduate School of Medicine, Philadelphia, and Hermann Rahn, Ph D , associate professor of physiology at the University of Rochester (N Y) School of Medicine and Dentistry, (2) a review of a long-range survey of the physiological sciences, sponsored by the American Physiological Society will reveal the results of a two year comprehensive study of physiology as a profession, and (3) members of the Physiology Study Section, U S Public Health Service, will meet to consider applications for grants-in-aid for research projects

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated

Area	Aug 7, 1954		Aug 8, 1954, Total
	Paralytic Type	Total Cases Reported	
New England States			
Maine	2	5	8
New Hampshire			8
Vermont			8
Massachusetts	4	14	19
Rhode Island		4	10
Connecticut	1	18	24
Middle Atlantic States			
New York	13	50	125
New Jersey	22	30	51
Pennsylvania		40	53
East North Central States			
Ohio	30	104	119
Indiana	18	39	46
Illinois	41	78	117
Michigan	30	95	158
Wisconsin	2	19	30
West North Central States			
Minnesota	8	28	139
Iowa	25	84	48
Missouri	10	30	58
North Dakota	1	5	14
South Dakota		1	5
Nebraska	22	32	12
Kansas	4	29	18
South Atlantic States			
Delaware	3	4	1
Maryland	5	8	32
District of Columbia	2	3	7
Virginia	22	39	47
West Virginia	6	10	39
North Carolina	15	54	51
South Carolina	4	15	10
Georgia	16	41	26
Florida	10	60	22
East South Central States			
Kentucky	15	48	28
Tennessee	5	54	62
Alabama	13	19	29
Mississippi	8	29	22
West South Central States			
Arkansas	4	9	21
Louisiana	10	18	18
Oklahoma	11	34	36
Texas	53	152	81
Mountain States			
Montana	1	4	6
Idaho		4	4
Wyoming	2	11	7
Colorado	6	10	16
New Mexico	2	11	7
Arizona		7	31
Utah		8	8
Nevada		9	5
Pacific States			
Washington	5	14	14
Oregon	4	9	13
California	118	211	157
Territories and Possessions			
Alaska	8	18	
Hawaii	1	3	3
Puerto Rico			
Total	594	1,033	1,873

Society News—Newly elected officers of the American Dermatological Association include Dr Richard S Weiss, St Louis, president, Dr Clark W Finnerud, Chicago, vice-president, and Dr J Lamar Callaway, Durham, N C , secretary —At the annual meeting of the Society for Investigative Dermatology, Dr Clarence S Livingood, Detroit, was elected president and Dr J Walter Wilson, Los Angeles, vice-president —At its annual meeting the American Proctologic Society elected the

following officers Dr A W Martin Marino, Brooklyn, N Y, president, Dr Stuart T Ross, Hempstead, N Y , president-elect Dr Kenneth E Smiley, Los Angeles, vice-president, Dr Rufus C Alley, Lexington, Ky , treasurer; and Dr Karl Zimmerman Pittsburgh, secretary —At the annual business meeting of the American Psychosomatic Society the following physicians took office Dr Lawrence S Kubie, New York, president, Dr Stanley Cobb, Boston, president-elect, and Dr Theodore Lidz, New Haven, Conn , secretary-treasurer The next annual meeting will be held May 4 and 5, 1955, at the Claridge Hotel in Atlantic City, N J —Officers of the American Radium Society for 1954-1955 include Dr John E Wirth, Pasadena, Calif , president, Dr Grant H Beckstrand, Long Beach, Calif , president elect, Dr Norman A McCormick, Windsor, Ontario, Canada first vice-president, Dr W Edward Chamberlain, Philadelphia second vice-president, Dr Robert E Fricke, Rochester, Minn, secretary, and Dr Douglas J Roberts, Hartford, Conn, treasurer —The annual meeting of the North Pacific Society of Neurology and Psychiatry was held at the Harrison Hot Springs Hotel, Harrison Hot Springs, British Columbia, Canada April 2 and 3 Dr Harold G Wolff, New York, guest speaker presented "Headache Mechanisms" and "Participation of the Nervous System in Processes Altering Vulnerability of Tissue" The following officers were elected for 1954 Dr William Y Baker, Seattle, president, Dr Wendell H Hutchens, Portland Ore , president-elect, Dr John W Evans, Portland, Ore , secretary-treasurer, and Drs Robert S Dow, Portland, Ore , Douglas E Alcorn, Victoria, B C , and Donald E Stafford, Seattle executive committee

LATIN AMERICA

New Medical Journal —*Revista da associação medica brasileira* the official organ of the Brazilian medical profession, publishes its first issue in March The 128 page journal contains original articles, clinical notes, editorials, correspondence, news, and abstracts The postal address of this quarterly publication is Caixa Postal 8 904, São Paulo, S P , Brazil

CORRECTION

Mosher Life-Saver —In a footnote in THE JOURNAL, Aug 1954, page 1297, the proper name Mosher was misspelled The pharyngeal airway referred to was named after Dr Harris I Mosher, professor emeritus at Harvard Medical School

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr George F Lull, 535 North Dearborn St , Chicago 10, Secretary
 1954 Clinical Meeting, Miami, Florida, Nov 29 Dec 2.
 1955 Annual Meeting, Atlantic City, N J , June 6-10
 1955 Clinical Meeting, Boston, Nov 29 Dec 2.
 1956 Annual Meeting, Chicago, June 11 15
 1956 Clinical Meeting, Seattle, Nov 27-30

ACADEMY OF PSYCHOSOMATIC MEDICINE, New York, Oct 8-9 Dr Ethel Allan Brown, 75 Bay State Road, Boston 15, Secretary
AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, The Waldorf-Astoria, New York, Sept 19-24 Dr W L Benedict, 100 First Avenue Bldg , Rochester, Minn , Executive Secretary
AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago Oct 4-7 Dr E H Christopher, 610 Church St , Evanston, Ill , Secretary
AMERICAN ASSOCIATION OF BLOOD BANKS, The Shoreham Washington, D C , Sept 13-16 Miss Marjorie Saunders, 3500 Gaston Ave , Dallas 4 Texas Secretary
AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Sheraton-Cadillac Hotel, Detroit, Oct 4-8 Miss Doris Gleason, 510 N Dearborn St., Chicago 10, Executive Director
AMERICAN ASSOCIATION OF OBSTETRICIANS GYNECOLOGISTS AND ABDOMINAL SURGEONS, The Homestead Hot Springs, Va , Sept 9-11 Dr Frank R Lock, Bowman Gray School of Medicine, Winston Salem, N C , Secretary
AMERICAN CANCER SOCIETY, Hotel Roosevelt, New York, Oct 17-24 Dr Charles S Cameron, 47 Beaver St , New York 4, Medical Director

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION Lake Placid Club Lake Placid N Y Oct. 14-16 Dr Marshall N Fulton 124 Waterman St., Providence 6 R. I. Secretary

AMERICAN COLLEGE OF GASTROENTEROLOGY The Shoreham Washington D C Oct 25-30 Dr A Xerxes Rosslen 33 West 60th St. New York 23 Secretary

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION Hotel Statler Washington D C. Sept. 6-11 Dr Walter J Zeiter 30 N Michigan Ave Chicago 2 Executive Director

AMERICAN FRACTURE ASSOCIATION Shamrock Hotel Houston Texas Oct. 11-14 Dr H W Wellmerling 626 Griesheim Bldg., Bloomington Ill. Secretary-General

AMERICAN HEART ASSOCIATION Jung Hotel New Orleans Oct. 26-30 Mr Irving Hexter 44 East 23d St. New York 10 Secretary

AMERICAN HOSPITAL ASSOCIATION Palmer House Chicago Sept. 13-16. Dr E. L. Crosby 18 East Division St. Chicago 10 Director

AMERICAN MEDICAL WRITERS ASSOCIATION Hotel Sherman, Chicago Sept. 24 Dr Harold Swanberg 510 Maine St., Quincy Ill., Secretary

AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY The Waldorf Astoria, New York, Sept. 19 Dr Louis J Felt 66 Park Ave New York Secretary

AMERICAN PUBLIC HEALTH ASSOCIATION Memorial Auditorium Buffalo N Y Oct 11-15 Dr Reginald M Atwater 1790 Broadway New York 19 Executive Secretary

AMERICAN ROENTGEN RAY SOCIETY Shoreham Hotel, Washington D C. Sept. 21-24 Dr Barton R. Young Germantown Hospital Philadelphia 44 Secretary

AMERICAN SOCIETY OF ANESTHESIOLOGISTS Netherland Plaza Hotel, Cincinnati Oct. 25-30 Dr J Earl Remlinger Jr 188 West Randolph St. Chicago 1 Secretary

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS Shoreham Hotel Washington D C Sept 6 Dr Clyde G Culbertson 1040-1232 W Michigan St Indianapolis Secretary

ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA Royal York Hotel Toronto Canada Oct. 12-14 Dr Henry B Kirkland P O Box 594 Newark N J., Secretary

ASSOCIATION OF AMERICAN MEDICAL COLLEGES French Lick Springs Hotel French Lick, Ind., Oct. 17-20 Dr Dean F Smiley 185 N Wabash Ave Chicago 1 Secretary

CALIFORNIA ACADEMY OF GENERAL PRACTICE, Statler Hotel Los Angeles, Oct. 24-27 Mr Wm. W Rogers 450 Mission St. San Francisco Executive Secretary

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS Hotel Jefferson St. Louis Oct. 7-9 Dr Harold L. Gainey Suite 602 116 S Michigan Ave. Chicago 3 Secretary

CENTRAL SOCIETY FOR CLINICAL RESEARCH Drake Hotel Chicago Oct. 29-30 Dr Robert H. Ebert 950 East 59th St. Chicago 37 Secretary

CLINICAL ORTHOPAEDIC SOCIETY Sheraton Hotel Chicago Oct. 7-9 Dr John H. Moe 825 Nicollet Ave Minneapolis Secretary

COLLEGE OF AMERICAN PATHOLOGISTS The Shoreham Washington D C. Sept 6 Dr Arthur H Dearing, 203 N Wabash Ave Chicago 1 Executive Secretary

COLORADO STATE MEDICAL SOCIETY Broadmoor Hotel, Colorado Springs Sept 21-24 Mr Harvey T Sethman 835 Republic Building, Denver 2 Executive Secretary

DELAWARE MEDICAL SOCIETY OF Dover Oct. 11-13 Dr Norman L Cannon 1208 Delaware Ave Wilmington Executive Secretary

GULF COAST CLINICAL SOCIETY Edgewater Park Miss Oct. 21-22 Dr F C Minkler Pascagoula Miss., Secretary

INDIANA STATE MEDICAL ASSOCIATION Murat Temple Indianapolis Oct. 26-28 Mr James A Waggener 23 East Ohio St. Indianapolis 4 Executive Secretary

INDUSTRIAL HEALTH CONFERENCE (Houston) Shamrock Hotel Houston Tex Sept. 23-25 Dr Sidney Schnur 411 Medical Arts Bldg., Houston 2, Tex Chairman.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY Kansas City Mo Oct. 4-7 Dr Ira C. Layton 306 E Twelfth St. Kansas City 6E Mo Secretary

KENTUCKY STATE MEDICAL ASSOCIATION Brown Hotel Louisville Sept. 21-23 Dr Bruce Underwood, 620 S Third St. Louisville 2, Secretary

MICHIGAN STATE MEDICAL SOCIETY Sheraton-Cadillac Hotel Detroit Sept. 29-Oct 1 Dr L. Fernald Foster 606 Townsend St., Lansing 15 Secretary

MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH Thorne Hall Auditorium Northwestern University Medical Campus, Chicago Oct 28 Dr R L Grissom Univ of Nebraska College of Medicine Dept of Internal Medicine Omaha 5 Secretary

MISSISSIPPI VALLEY MEDICAL SOCIETY Hotel Sherman Chicago Sept. 22-24 Dr Harold Swanberg 510 Maine St. Quincy Ill. Secretary

MONTANA MEDICAL ASSOCIATION Hotel Finlen Butte Sept. 16-19 Mr L R Hepland 1236 N 28th St. Billings Executive Secretary

NATIONAL ASSOCIATION FOR MENTAL HEALTH Hotel Statler New York Oct 23-25 Mr Robert M Heininger 1790 Broadway New York 19 Executive Director

NATIONAL PROCTOLOGIC ASSOCIATION Maryland Hotel Chicago Oct 7-9 Dr George E Mueller 59 E Madison St., Chicago 2 Executive Secretary

NEW HAMPSHIRE MEDICAL SOCIETY Mt. Washington Hotel Bretton Woods Oct. 3-5 Dr W H. Butterfield 18 School St., Concord Secretary

NORTHERN MINNESOTA MEDICAL ASSOCIATION Willmar Sept. 10-11 Dr C L. Oppegaard Crookston Secretary

OMAHA MID-WEST CLINICAL SOCIETY Paxton Hotel Omaha Oct. 25-28 Dr Louis E. Moon 1031 Medical Arts Bldg. Omaha 2, Secretary

OREGON STATE MEDICAL SOCIETY Heathman Hotel, Portland Oct. 13-16. Dr Charles E Littlehales 1115 S W Taylor St. Portland 5 Executive Secretary

PENNSYLVANIA MEDICAL SOCIETY OF THE STATE OF Bellevue-Stratford Hotel Philadelphia, Oct. 17-22 Dr Harold B Gardner 230 State St. Harrisburg, Secretary

REGIONAL MEETINGS AMERICAN COLLEGE OF PHYSICIANS

Bismarck, N D Sept. 11 Dr Robert B Radl 221 Fifth St. Bismarck, N D., Governor

Midwest, Indianapolis Claypool Hotel Oct. 9 Dr Wendell A Shullenberger 3470 Central Ave Indianapolis, Chairman

New England Hartford Conn Oct. 22. Dr John C. Leonard 80 Seymour St., Hartford Conn Chairman.

Southeastern, Edgewater Gulf Hotel Edgewater Park, Miss Oct. 15-16 Dr E. Dice Lineberry 1529 N 25th St., Birmingham 4 Ala., Governor

SOUTHWESTERN SURGICAL CONGRESS Skirvin Hotel Oklahoma City Sept. 20-22. Dr C. R. Rountree 1227 Classen Drive Oklahoma City 3 Secretary

THE CONSTANTINIAN SOCIETY The Broadmoor Colorado Springs Colo Sept. 26-29 Dr C. F. Shook, P O Box 1035-36 Toledo 1 Ohio Secretary

U S CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS Chicago Sept. 7-10 Dr Karl Meyer 1516 Lake Shore Dr., Chicago Secretary

VERMONT STATE MEDICAL SOCIETY Mt. Washington Hotel Bretton Woods N H., Oct. 3-5 Dr James P Hammond 337 South St. Bennington Secretary

WASHINGTON STATE MEDICAL ASSOCIATION Davenport Hotel Spokane Sept. 18-22. Dr Bruce Zimmerman 1309 Seventh Ave Seattle 1 Secretary

WESTERN ASSOCIATION OF RAILWAY SURGEONS Sun Valley Idaho Sept. 23-25 Dr Leo L. Stanley 1322 Fifth Ave. San Rafael, Calif., Secretary

WISCONSIN STATE MEDICAL SOCIETY OF Hotel Schroeder Milwaukee Oct. 5-7 Mr Charles H Crownhart 704 E Gorham St. Madison 3 Secretary

FOREIGN AND INTERNATIONAL

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall London England, June 21-25 1955 Mr J H. Harley Williams Tavistock House North Tavistock Square, London WC1 England, Secretary General

CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS Madrid, Spain Sept. 26-Oct. 2, 1954 Secretariat, Escuela de Tisiologia Ciudad Universitaria Madrid Spain

CONFERENCE OF THE SOLVAY INSTITUTE OF SOCIOLOGY Universiti Libre de Bruxelles Brussels Belgium Oct. 18-23 1954 For information write Assistant to the Secretary A Dorsinfang Smets Solvay Institute of Sociology Parc Leopold Brussels 4 Belgium

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY London, England July 18-23 1955 Dr C B Frisby National Institute of Industrial Psychology 14 Welbeck St. London W1 England President

CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS New York N Y U S A., Sept. 12-17 1954 Professor Franceschetti 2 avenue Marmot, Geneva Switzerland Secretary-General

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION Cambridge England July 4-8 1955 Mr James G L Jackson 152 Harley St., London W1 England Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY Vichy Paris, and Enghien France Sept. 24-27 1954 Dr Francon 55 rue des Mathurins Paris 8 France. Secretary-General

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE Bournemouth England April 26-29 1955 Mr P Arthur Wells Royal Sanitary Institute 90 Buckingham Palace Road London SW1 England Secretary

INTER AMERICAN CONGRESS OF RADIOLOGY Shoreham Hotel Washington D C U S A., April 24-29 1955 Dr Eugene P Pendergrass 3-09 Spruce St. Philadelphia 4 Pa U S A Secretary-General.

INTER AMERICAN SESSION AMERICAN COLLEGE OF SURGEONS Universidad Mayor de San Marcos de Lima, Lima Peru, S A., Jan. 11-14 1955 Dr Michael L. Mason 40 East Erie St. Chicago 11 Ill., U S A., Secretary

INTERNATIONAL ANATOMICAL CONGRESS Paris, France July 25-30 1955 Prof Gaston Cordier 45 rue des Saints-Pères Paris 6 France, Secretary-General

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY Ambassador Hotel Los Angeles Calif U S A., Oct. 10-14 1954 For information write Dr T H. Seldon, 102 110 Second Avenue S.W., Rochester, Minn. U S A.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY Brussels Belgium Aug 1-6 1955 Prof C Liebecq 17 Place Delcour Liege Belgium Secretary-General

INTERNATIONAL CONGRESS OF CLINICAL PATHOLOGY, Washington, D C., U S A, Sept 6-10, 1954 Dr Robert A Moore, University of Pittsburgh, Schools of the Health Profession, Pittsburgh 13, Pa, U S A, Chairman, Committee on Arrangements

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland, May 26-31, 1955 Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary General

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST, Barcelona, Spain, Oct 4-8, 1954 Mr Murray Kornfeld, 112 East Chestnut St, Chicago 11, Ill U S A, Executive Secretary

INTERNATIONAL CONGRESS OF HEMATOLOGY, Paris, Sept 6-11, 1954 Dr Jean Bernard, 86 rue d'Assas Paris 6^e France, Secretary

INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE, Rome and Salerno, Italy, Sept 13-20, 1954 For information write Segreteria XIV Congresso Internazionale di Storia della Medicina Istituto di Storia della Medicina Citta Universitaria, Rome Italy

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Madrid, Spain, Sept 25-30, 1954 Dr Jesus Calvo Melendro, Hospital Provincial, Soria, Spain, Secretary-General

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples, Italy, Sept 13-19, 1954 Professor Scipione Caccuri, Director Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE, Stockholm Sweden Sept 15-18 1954 Professor Anders Kristenson, Karolinska Sjukhuset Stockholm 60, Sweden, Secretary General

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, Luxembourg Luxembourg Nov 7-12 1954 Colonel A R Vernengo, Direccion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentina, S A, Secretary-General

INTERNATIONAL CONGRESS OF NUTRITION Amsterdam, Netherlands Sept 13-17, 1954 Dr M van Eckelen, Centraal Instituut voor Voedingsonderzoek T N O, 61 Catharynesingel, Utrecht, Netherlands General Secretary

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY University of Montreal and McGill University, Montreal Canada, Sept 9-11, 1954, and Waldorf-Astoria New York N Y U S A, Sept 12-17, 1954 Dr William L Benedict 100 First Avenue Building Rochester Minn, U S A, Secretary General

INTERNATIONAL CONGRESS OF PLASTIC SURGERY Stockholm, Sweden Aug 1-4, 1955, and Uppsala, Sweden, Aug 5, 1955 Dr Tord Skoog, Uppsala, Sweden, General Secretary

INTERNATIONAL FEDERATION OF MEDICAL STUDENT ASSOCIATIONS Rome Italy Oct 1-5, 1954 Mr Jorgen Falck Larsen, 12, Kristianiagade, Copenhagen Ø Denmark, General Secretary

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3 1955 Capt J E Stone International Hospital Federation, 10 Old Jewry, London, E C 2, England, Hon Secretary

INTERNATIONAL POLIOMYELITIS CONGRESS University of Rome, Orthopedic Clinic, Rome, Italy, Sept. 6-10, 1954 Mr Stanley E Henwood, 120 Broadway, New York 5, N Y, U S A, Executive Secretary

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION Paris France, Sept 12-19 1954 For information write Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 boulevard Diderot, Paris 12^e, France

INTERNATIONAL SOCIETY FOR CELL BIOLOGY, Leiden, Netherlands, Sept 1-8, 1954 Professor Peter J Gaillard, University of Leiden, Leiden, Netherlands, Secretary

INTERNATIONAL SOCIETY OF GEOGRAPHICAL PATHOLOGY, Washington D C U S A, Sept 6-10, 1954 Professor Fred C Roulet Hebelstrasse 24 Basel, Switzerland, Secretary General

INTERNATIONAL SURGICAL CONGRESS, Geneva, Switzerland, May 23-26, 1955 Dr Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois U S A, Secretary-General

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5, 1955 Dr Mitsuharu Goto, University Hospital Medical Faculty of Kyoto University, Kyoto, Japan, Secretary-General

LATIN AMERICAN CONGRESS OF ANESTHESIOLOGY, Sao Paulo, Brazil, S A, Sept. 12-18, 1954 Dr Zairo E G Vieira, Praca Floriano, 55-7^o, And, Rio de Janeiro, Brazil, S A, Secretario

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Lima Peru, S A, Feb 14-19, 1955 Dr Cassius Lopez de Victoria, 176 East 71st St, New York 21, N Y, U S A, Executive Director

MEDICAL JOURNALISM MEETING, Exposition Universelle Romaine, Rome, Italy, Sept 30, 1954 Dr H Clegg, B M A House, Tavistock Square, London W C 1, England, Secretary

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION CONGRESS, Lake Garda, Italy, Sept 15-21, 1954 Dr Ada Chree Reid, 118 Riverside Drive New York 24 N Y, U S A, President

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, Lima, Peru, S A, Feb 11-25, 1955 Dr Arturo Martinez, 54 East 72d St, New York 21, N Y U S A, Secretary

PAN AMERICAN HOMOPATHIC MEDICAL CONGRESS, Hotel Gloria, Rio de Janeiro, Brazil, S A, Oct. 2-13, 1954 Dr Paul S Schantz, 103 West Main St, Ephrata, Pa, U S A, Executive Secretary

PAN-PACIFIC SURGICAL CONGRESS, Honolulu, Hawaii, Oct 7-18, 1954 Dr F J Pinkerton Suite 7, Young Bldg, Honolulu 13 Hawaii Director General

WORLD CONGRESS OF CARDIOLOGY, Washington, D C, U S A, Sept. 12-18, 1954 Dr L W Gorham, 44 East 23d St, New York 10, N Y, U S A, Secretary-General

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES, Scheveningen-The Hague, Netherlands, Sept. 13-17 1954 Secretariat Miss H P Post, Pleter Lastmarkade 37, Amsterdam 2, Netherlands.

WORLD MEDICAL ASSOCIATION, Rome, Italy, Sept. 26-Oct 2, 1954 Dr Louis H Bauer, 345 East 46th St, New York 17, N Y, U S A, Secretary-General

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Held in approved medical schools where there are five or more candidates Dates Sept 7-8 (Part I only) Candidates may file examinations at any time but the National Board must receive them at least six weeks before the date of the examination they wish to take New candidates should apply by formal registration, registered candidates should notify the board by letter Sec, Dr John P Hubbard, 133 S 36th St, Philadelphia 4

BOARDS OF MEDICAL EXAMINERS

ARIZONA * *Examination and Reciprocity* Phoenix, Oct 13-15, Jan 12-14, 1955 and April 13-15, 1955 Ex Sec, Mr Robert Carpenter, 401 Security Bldg, Phoenix

CALIFORNIA *Written* San Diego, Aug 23-26 Sacramento, Oct 18-21 *Oral* San Diego Aug 21, Los Angeles, Nov 20 *Oral and Clinical Examination for Foreign Medical School Graduates* Sec, Dr Louis E Jones 1020 N Street, Sacramento

ILLINOIS *Examination and Reciprocity* Chicago, Oct 5-7 Supt of Registration Mr Frederic B Selcke, Capitol Bldg Springfield

MINNESOTA * *Examination and Reciprocity* Minneapolis Oct 19-21 Sec, Dr E M Jones 230 Lowry Medical Arts Bldg, St Paul 2

MONTANA *Examination and Reciprocity* Helena, Oct 4 Sec, Dr S A Cooney 214 Power Block, Helena

NEW HAMPSHIRE *Examination and Reciprocity* Concord, Sept 8-9 Sec, Dr John S Wheeler, 107 State House, Concord

NEW MEXICO * *Examination and Reciprocity* Santa Fe Oct. 11-12 Sec, Dr R C Derbyshire, 227 E Palace Ave Santa Fe

NORTH CAROLINA *Endorsement* Rocky Mount Oct 4 Sec, Dr Joseph J Combs, Professional Building Raleigh

OHIO *Examination* Columbus, Dec 13-15 *Reciprocity* Columbus, Oct 4 Sec, Dr H M Platter, Wyandotte Bldg, Columbus 15

OREGON * *Examination and Reciprocity* Portland, Oct 14-16 Exec Sec, Mr Howard I Bobbitt, 609 Falling Building Portland 4

TENNESSEE * *Examination* Memphis, Sept 29-30 Sec, Dr H W Qualls, 1635 Exchange Bldg, Memphis

TEXAS * *Examination and Reciprocity* Fort Worth, Dec 2-4 Sec, Dr M H Crabb, 1714 Medical Arts Bldg, Fort Worth 2

WEST VIRGINIA *Examination* Charleston Oct 11 Sec, Dr Newman H Dyer, State Office Bldg No 3, Charleston 5

WISCONSIN * *Reciprocity* Madison, Oct 15 Sec, Dr Thomas W Tormey, Room 1140 State Office Bldg, Madison 2

WYOMING *Examination and Reciprocity* Cheyenne, Oct 4 Sec Dr Franklin D Yoder, State Office Bldg Cheyenne

ALASKA * On application Sec, Dr W M Whitehead, 172 South Franklin St, Juneau

GUAM The Commission on Licensure will meet whenever a candidate appears or submits his credentials Sec, Dr Benedict Cooper Agana

PUERTO RICO *Examination* San Juan, Sept 7-11 Sec, Dr Joaquin Mercado Cruz, Box 9156, Santurce

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA On application Juneau or other towns in Territory as decided by Board *Reciprocity* On application Sec, Dr C Earl Albrecht Box 1931 Juneau

ARKANSAS *Examination* Little Rock, Oct 5-6 Sec Dr Louis E Gebauer, 1002 Donaghey Bldg, Little Rock

COLORADO *Examination* Denver, Sept 8-9 Sec, Dr Esther B Starks 1459 Ogden St, Denver 18

MICHIGAN *Examination* Detroit and Ann Arbor, Oct 8-9 Sec, Mrs Anne Baker, Mason Bldg, Lansing 2

NEBRASKA *Examination* Omaha, Oct 5-6 Director Mr Husted K. Watson, Room 1009, State Capitol Bldg, Lincoln 9

OREGON *Examination* Portland, Sept 11 and Dec 4 Sec, Mr Charles D Byrne, State Board of Higher Education, Eugene

TENNESSEE *Examination* Memphis, Sept 20-21 Sec, Dr O W Hyman 874 Union Ave, Memphis 3

TEXAS *Examination* Austin Oct 22-23 Address, Mrs Betty Ratcliff, Chief Clerk, 407 Perry-Brooks Bldg, Austin

WISCONSIN *Examination* Madison, Sept 24 Milwaukee, Dec 4 Sec, Mr W H Barber, 621 Ransom St, Ripon.

*Basic Science Certificate required

DEATHS

Haviland, Frank Ross † Syracuse, N Y, born Jan 18, 1880, Syracuse University College of Medicine, New York 1903, formerly on the faculty of Columbia University College of Physicians and Surgeons in New York, where he was clinical professor of psychiatry at Fordham University School of Medicine at one time clinical professor of neurology at the Long Island College Hospital in Brooklyn, life fellow of the American Psychiatric Association, life member of the New York Society for Clinical Psychiatry, member of the National Association for Mental Health, emeritus member, Syracuse Mental Hygiene Committee and the Syracuse Academy of Medicine from 1942 to 1946 neuropsychiatrist with an armed forces induction team, for which he received the Selective Service Medal, consulting psychiatrist at the Marcy (N Y) State Hospital and the Syracuse Psychopathic Hospital, at one time on the staff of the Brooklyn State Hospital served as director of psychiatry at the Manhattan State Hospital in New York City, died June 27, aged 74, of emphysema.

Egdahl, Anfin † Rockford, Ill, born in Menomonee, Wis, Dec 25, 1875, Johns Hopkins University School of Medicine, Baltimore, 1904, member of the American Trudeau Society, past president of the Winnebago County Medical Society and the Winnebago County Tuberculosis Association, at one time on the faculty of the State University of Iowa College of Medicine in Iowa City, since 1946 county medical examiner; served during World War I, later joined the reserves, serving as commanding officer of the 73rd evacuation hospital, held the rank of colonel when he was transferred to the inactive reserve at one time head of the department of preventive medicine at the University of North Dakota School of Medicine in Grand Forks and director of public health of the state of North Dakota chairman, board of trustees of the Rockford Municipal Sanatorium, died July 6, aged 78, of coronary occlusion

Kibler, Clarence LeRoy † Columbia, S C born July 16, 1873 Maryland Medical College, Baltimore, 1907, past president of the Columbia Medical Society and vice-president of the South Carolina State Medical Association, past president of the Seaboard Air Line Railroad Surgeons' Association formerly member of the board of trustees of Newberry College during World War I a member of the regional board of examiners for many years state supervisor in ophthalmology for the department of public welfare and vice president of the Union National Bank, which he helped organize, member of the medical staffs of Columbia and Providence hospitals and of Baptist Hospital, where he died June 19, aged 80

Schlesinger, Lee Cahn † New Orleans born in Memphis Tenn, March 29, 1912, University of Tennessee College of Medicine, Memphis, 1935, specialist certified by the American Board of Orthopaedic Surgery, assistant professor of clinical orthopedics at Tulane University of Louisiana School of Medicine member of the American Academy of Orthopaedic Surgeons fellow of the American College of Surgeons, served during World War II consultant in orthopedic surgery at Bogalusa (La) Medical Center; affiliated with Charity Hospital and Touro Infirmary, consultant in orthopedics at Flint-Goodridge Hospital orthopedic surgeon for Louisiana State Crippled Childrens Program consulting orthopedic surgeon for the Louisville and Nashville Railroad, died June 27, aged 42

Blesse, Frederick A., Brigadier General, U S Army, retired, Richmond, Va born in Elgin Ill, Nov 22 1888 the Hahnemann Medical College and Hospital, Chicago 1913 entered the Medical Corps of the U S Army as a first lieutenant in January 1918 promoted through the various ranks to that of colonel, July, 1943, promoted to brigadier general in April 1948 retired Nov 30 1948, remaining on active duty until Nov 30, 1950 served as chief surgeon in North Africa during World

War II and for three years with the Army Ground Forces in Fort Monroe held the Distinguished Service Medal and the Legion of Merit, since December, 1950 director of the Henrico County Health Department died June 4, aged 65, of coronary thrombosis

Fellows, Ralph Manos † Wauwatosa, Wis, born in Salisbury, Mo Aug. 28 1894, University and Bellevue Hospital Medical College, New York 1922 specialist certified by the American Board of Psychiatry and Neurology, member of the American Psychiatric Association and the Central Neuropsychiatric Association, fellow of the American College of Physicians, served during World Wars I and II, at one time vice president of the Kansas Society for Mental Hygiene resigned in 1940 as superintendent of Osawatomie (Kan) State Hospital formerly clinical director of the Menninger Clinic in Topeka, Kan medical director of the Milwaukee County Asylum for Chronic Insane died in Milwaukee June 20, aged 59, of heart disease and hypertension.

Nelson, Moses Russell, New York City, born in Radnor, Pa, March 21, 1895 University of Pennsylvania School of Medicine, Philadelphia, 1920, assistant clinical professor of obstetrics and gynecology at the New York Medical College, Flower and Fifth Avenue Hospitals, fellow of the International College of Surgeons Harlem Surgical Society, American Academy of Science, American Museum of Natural History, and the American College of Surgeons, member of the National Medical Association, consultant at Community Hospital in Newark N J affiliated with the New York City Hospital as associate visiting obstetrician and gynecologist, died June 24, aged 58, of cerebral hemorrhage

Gamble, Hugh Agnew † Greenville, Miss born in Saltillo, Aug 19, 1876, Medical Department of Tulane University of Louisiana, New Orleans, 1904, member of the House of Delegates of the American Medical Association from 1930 through 1932 and in 1937, member of the Southern Surgical Association and the Southeastern Surgical Congress, fellow of the American College of Surgeons member of the founders group of the American Board of Surgery past president of the Mississippi State Medical Association Mississippi State Hospital Association and the Delta Medical Society city councilman on the staff of the King's Daughters Hospital, where he died July 11, aged 77, of cancer

Rafsky, Henry Aaron † New York City University and Bellevue Hospital Medical College New York 1913 specialist certified by the American Board of Internal Medicine, member of the American Gastro-Enterological Association and the National Gastroenterological Association fellow of the American College of Physicians clinical professor of medicine (gastroenterology) New York Post-Graduate Medical School and Hospital Columbia University president of the medical board of the Home and Hospital of the Daughters of Jacob on the staff of the Lenox Hill Hospital died in Atlantic Beach N Y., July 31, aged 64

Cress, Orlando Elsworth † Van Wert Ohio, Eclectic Medical College Cincinnati 1921 served as county coroner veteran of World Wars I and II, on the staff of the Van Wert County Hospital, died June 19, aged 65, of coronary occlusion

Crossen, Henry Francis † Detroit Indiana University School of Medicine, Indianapolis, 1919 specialist certified by the American Board of Otolaryngology fellow of the American College of Surgeons affiliated with Harper, St. Joseph's Mercy and Mount Carmel Mercy hospitals senior otologist at the Detroit House of Correction died June 20 aged 60, of coronary thrombosis

Dovle, Leo Walter Jr., San Francisco Northwestern University Medical School Chicago 1943 at one time assistant clinical professor of obstetrics and gynecology at the University of California Medical School served during World War II died June 28 aged 35 of acute hemorrhagic pancreatitis.

Dunigan, Jay Thomas ⊕ Albany, N Y, Albany Medical College, 1934, served during World War II, physician for the city public schools, on the staff of St Peter's Hospital, died in Portland, Me, July 7, aged 43

Eastman, Claude Washington, Carlin, Nev, Washington University School of Medicine, St Louis, 1904, for many years district surgeon for the Southern Pacific Railroad, died in Elko (Nev) General Hospital June 24, aged 80, of uremia and hypostatic pneumonia

Eldridge, Jesse Cleveland, Chattanooga, Tenn, Vanderbilt University School of Medicine, Nashville, 1913, served during World War I, at one time health director of Hamilton County, died in St Petersburg, Fla, June 11, aged 67, of bronchopneumonia

English, Merton Alden, Chevy Chase, Md, George Washington University School of Medicine, Washington, D C, 1915, died July 25, aged 75

Fender, Marion Sims, Ehrhardt, S C, Emory University School of Medicine, Atlanta, 1915, also a druggist, for many years chairman and member of the board of trustees of the school district, died in the Columbia Hospital June 17, aged 63, of cerebral thrombosis

Fulton, William Van Voorhis ⊕ Everett, Wash, Jefferson Medical College of Philadelphia, 1912, died in Everett General Hospital July 5, aged 71, of acute myocardial infarction

Gay, Clarence Bertram ⊕ Vineyard Haven, Mass, University of Pennsylvania Department of Medicine, Philadelphia, 1899, formerly supervising censor, executive councilor, and president of the Worcester North District Medical Society, died in Martha's Vineyard Hospital in Oak Bluffs April 30, aged 81, of arteriosclerotic heart disease

Goldman, Max ⊕ Kansas City, Mo, Kansas City Medical College, 1901, past president of the Jackson County Medical Society, fellow of the American College of Surgeons, affiliated with Menorah and St Mary's hospitals, died July 13, aged 73, of cardiac disease

Goodloe, Hart, Tallahassee, Fla, University of Louisville (Ky) Medical Department, 1900, served during World War I, died in Biloxi, Miss, April 21, aged 79, of myocardial infarction and coronary occlusion

Goodrich, Elmer Everett ⊕ Holdenville, Okla, Barnes Medical College, St Louis, 1902, served during World War I, formerly practiced in Chickasha, where he was director of the county-city health unit, died June 18, aged 79

Grainger, Gustavius A ⊕ Farmington, W Va, Vanderbilt University School of Medicine, Nashville, Tenn, 1904, died May 4, aged 71, of cardiac decompensation

Groman, Herman Charles ⊕ Hammond, Ind, Rush Medical College, Chicago, 1907, formerly health commissioner of Hammond, died in White Lake, Mich, July 21, aged 72

Halleck, Frank Dana ⊕ Bowling Green, Ohio, Ohio Medical University, Columbus, 1898, past president of the Wood County Medical Society, died in Wood County Hospital May 14, aged 81, as the result of a fall

Herskowitz, Max, New York City, Long Island College Hospital, Brooklyn, 1918, died July 2, aged 57, of heart disease

Hollingsworth, Marshall P ⊕ Princeton, Ind, Medical College of Indiana, Indianapolis, 1891, formerly county coroner, medical examiner for the draft board during World Wars I and II, at one time medical examiner for the pension board, for many years medical examiner for the Metropolitan Life Insurance Company and the Southern Railway, died June 16, aged 92, of cerebral thrombosis

Howell, Samuel Monroe ⊕ Cartersville, Ga, Atlanta School of Medicine, 1913, served during World War I, founder of the Howell-Quillian Clinic-Hospital, died April 13, aged 64, of carcinoma of the bladder

Huffman, Logan Herbert, Oklahoma City, University of the South Medical Department, Sewanee, Tenn, 1903, served during World War I, died in St Anthony's Hospital June 19, aged 81

James, Byrd, Chicago, Meharry Medical College, Nashville, Tenn, 1915, died in the Provident Hospital July 15, aged 73, of bronchopneumonia and carcinoma of the esophagus

James, Charles Stanton ⊕ Omaha, Omaha Medical College, 1899, University and Bellevue Hospital Medical College, New York, 1900, fellow of the American College of Surgeons, affiliated with St Catherine's Hospital and Doctors Hospital, where he died May 29, aged 76, of carcinoma of the stomach

Jenkins, Harry Loveless ⊕ Arcata, Calif, University of California Medical School, San Francisco, 1925, member of the American Academy of General Practice, served during World War I, died in the Trinity Hospital July 6, aged 57

Johnson, Walter Brenaman, Cambridge, Md, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1928, secretary-treasurer of the Dorchester County Medical Society, county and city health officer, formerly in Cumberland, served as city and county health officer, formerly health officer of Caroline County at Denton, president of the Rotary Club, on the staff of the Cambridge Hospital, died June 4, aged 52, of cerebral hemorrhage

Jones, John M ⊕ Millersburg, Ohio, Starling Medical College, Columbus, 1895, in 1917 appointed chief medical examiner for Holmes County Draft Board, died July 6, aged 83

Kincheloe, John E ⊕ Hardinsburg, Ky, Kentucky School of Medicine, Louisville, 1899, died June 25, aged 76, of coronary thrombosis

King, Ossian Homer ⊕ Hot Springs National Park, Ark, College of Physicians and Surgeons, Little Rock, 1911, specialist certified by the American Board of Ophthalmology, member of the American Academy of Ophthalmology and Otolaryngology, past president of the Garland County Medical Society, on the staff of St Joseph's Hospital, died in Fort Roots Hospital, North Little Rock, June 15, aged 67, of lower nephron nephrosis, thrombosis, and arteriosclerosis

Knoop, William A ⊕ Chesterfield, Ill, Northwestern University Medical School, Chicago, 1905, died in Carlinville July 6, aged 73, of arteriosclerotic heart disease

Lee, Elbert Johnson Jr ⊕ St Louis, Barnes Medical College, St Louis, 1898, served during World War I, at one time associated with the U S Public Health Reserve, member of the state legislature, 1943-1944, formerly superintendent of the Charles B Towns Hospital in New York, City Sanatorium, and City Hospital, served on the staffs of the Barnes Hospital and the Missouri Baptist Hospital, where he died June 20, aged 77, of coronary thrombosis

Leland, John Tyndan ⊕ Mill Valley, Calif, the Hahnemann Medical College and Hospital, Chicago, 1899, died suddenly July 20, aged 80, of cerebral hemorrhage

Lichtenstein, Perry Maurice ⊕ New York City, Cornell University Medical College, New York, 1910, also a lawyer, for many years resident physician in Tombs Prison, medical assistant to district attorney, author of "A Doctor Studies Crime", died June 14, aged 67

Lukins, Aaron Tomlin ⊕ Tacoma, Wash, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910, served with the British Expeditionary Force overseas during World War I, past president of the Whitman County Medical Society and Lewis County Medical Society, died April 14, aged 71, of cerebral thrombosis and arteriosclerosis

McAfee, James D, Cleveland, Homeopathic Hospital College, Cleveland, 1891, past president of the old city board of health, superintendent of the Cleveland City Hospital from 1906 to 1913, died June 26, aged 92, of coronary occlusion

McCleery, Thomas Sandrock ⊕ Hazel Crest, Ill, Chicago Medical School, 1936, health officer, on the staff of the Hazel Crest General Hospital, and the Illinois Central Hospital in Chicago, where he died July 26, aged 55, of ruptured dissecting aneurysm

McClelland, Willis Barr ⊕ Franklin, Pa, Boston University School of Medicine, 1931, served during World War II, member of the American Trudeau Society, formerly affiliated with the Pennsylvania State Sanatorium for Tuberculosis in Hamburg, died June 6, aged 48

McDiarmid, Thomas Scott † Gadsden, Ala., Birmingham Medical College, 1909, served during World War I, died July 4, aged 70, of carcinoma of the lung

McEvoy, Frank Edward † Providence, R. I., University of Pennsylvania School of Medicine, Philadelphia, 1913, specialist certified by the American Board of Surgery; member of the New England Surgical Society, past president of the Providence Surgical Society, fellow of the American College of Surgeons affiliated with State Hospital for Mental Diseases in Howard and the Roger Williams General and St. Joseph's hospitals, died July 15, aged 66, of carcinoma of the prostate

Mainegra, Robert James, New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1906 died June 14, aged 71

Maker, Ralph Waldo, Acampo, Calif., College of Medical Evangelists, Loma Linda and Los Angeles, 1918 for many years on the staff of the Glendale (Calif.) Sanitarium and Hospital and the Norwalk (Conn.) State Hospital, on the staff of the Stockton (Calif.) Hospital, died July 9, aged 70, of cerebral embolism.

Malmstone, Francis A. † Griffith, Ind., Chicago College of Medicine and Surgery, 1914, on the staffs of St. Margaret Hospital in Hammond, St. Catherine's, Methodist, and St. Mary's Mercy hospitals in Gary; died in the American Hospital in Paris, France, July 2, aged 77, of cardiac thrombosis.

Martin, Robert Alfonzo † Pell City, Ala., Vanderbilt University School of Medicine, Nashville, 1901, on Jan. 8, 1953, the Greater Pell City Chamber of Commerce sponsored a "Dr. Martin Day" honoring him for the 50 years of medical service and friendship that he had given this community, medical director and owner of the Pell City Infirmary; died in the Ochsner Foundation Hospital, New Orleans, July 10, aged 74, of coronary thrombosis

Moss, John Gaines † Johnson City, Tenn., Chattanooga Medical College, 1901, member of the Southeastern Surgical Congress, fellow of the American College of Surgeons, served in France during World War I, affiliated with the Memorial Hospital, died June 18, aged 75

Mullikin, Clarence William † Greensburg, Ind., Indiana University School of Medicine, Indianapolis, 1908, died in Tucson Ariz., April 30, aged 73, of peritonitis, paralytic ileus acute obstructive cholecystitis, and fatty degeneration of the liver

Nahigan, Matthew Nigohos, Los Angeles, Yale University School of Medicine, New Haven, 1907 affiliated with St. Vincent Hospital, where he died June 26, aged 77, of heart disease

Natherson, Frank Marion † Parma, Ohio, Ohio State University College of Medicine, Columbus 1934 affiliated with Evangelical Deaconess Hospital in Cleveland, died June 19, aged 46, of coronary thrombosis

Nathorff, Erich † New York City, Friedrich Wilhelms Universität Medizinische Fakultät, Berlin, Prussia Germany, 1914 co author of several standard German textbooks; died in Atlantic City, N. J. June 25, aged 64, of coronary thrombosis

Neil, James Benton † Knoxville, Tenn., Vanderbilt University School of Medicine, Nashville, 1912, died in Fort Sanders Hospital June 21 aged 66, of endocarditis

Newton, Charles Irving † Geneseo, N. Y., University of Michigan Homeopathic Medical School, Ann Arbor, 1907 died July 7 aged 70

O'Neill, Dillon Garrett † Chicago, Georgetown University School of Medicine, Washington, D. C., 1913, served during World War I died in the Veterans Administration Hospital in Hines Ill., July 31, aged 67, of bilateral bronchopneumonia

Paulus, Clarence Allen † Telford, Pa., Medico-Chirurgical College of Philadelphia, 1915 served during World War I affiliated with Grand View Hospital in Sellersville, where he died May 30, aged 68, of ruptured aneurysm of the abdominal aorta

Peiffer, Charles Oscar, Philadelphia, Jefferson Medical College of Philadelphia, 1904 associated on the staffs of Episcopal Hospital and Stetson Hospital died June 29 aged 76, of arteriosclerosis and renal disease

Powers, Arthur Linn, Locke, N. Y., University of the City of New York Medical Department, 1890 died July 2, aged 88

Rachlin, William † Brooklyn, New York University Medical College, New York, 1898 consulting physician at the Marionides Hospital, died in Manhasset July 21, aged 79, of acute uremia.

Randall, Emma Jean Pearson, Van Wert, Ohio, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, died in Toledo, July 10, aged 79, of cancer

Reed, John Chamberlain † Duquesne, Pa., Western University of Pennsylvania Medical Department, Pittsburgh, 1907 died in Sharon May 23 aged 76, of pulmonary embolus and arteriosclerotic heart disease

Renfrow, Thomas Franklin † Billings, Okla., Missouri Medical College, St. Louis 1896 died in Fort Roots Veterans Administration Hospital in North Little Rock July 8, aged 82, of cerebral thrombosis and arteriosclerosis

Riemer, Hugo Bruno Charles † Norwood, Mass., Harvard Medical School, Boston, 1904, specialist certified by the American Board of Ophthalmology, member of the American Ophthalmological Society and the New England Ophthalmological Society, at one time associated with the U. S. Public Health Service consultant at the Massachusetts Hospital School in Canton, Wrentham (Mass.) State School, consultant in surgery at the Massachusetts Eye and Ear Infirmary in Boston, died July 10, aged 78, of cerebral hemorrhage

Salters, Leland Blackwood † Florence, S. C., University of Maryland School of Medicine, Baltimore, 1903 affiliated with Bruce and Saunders hospitals, died May 28, aged 76, of myocarditis

Saltus, Lloyd Seaman † Brookside, N. J., Columbia University College of Physicians and Surgeons, New York, 1935, served during World War II, affiliated with Columbia-Presbyterian Medical Center in New York and the Morristown (N. J.) Memorial Hospital, died June 19, aged 45, of cancer of the brain

Simon, Peter Joseph † Cleveland, Eclectic Medical College, Cincinnati, 1938, died in the Deaconess Hospital, Cleveland, June 7, aged 43, of coronary sclerosis

Thomas, Calvin Merrill, Brewer, Maine, University of Pennsylvania Department of Medicine, Philadelphia, 1902 past president of the Penobscot County Medical Society; affiliated with the Eastern Maine General Hospital in Bangor, where he died May 22, aged 74, of carcinoma of the prostate with metastasis

Thompson, William Givens † Holden, Mo., Missouri Medical College, St. Louis, 1890, specialist certified by the American Board of Radiology; served during World War I for many years mayor of Holden died July 2, aged 72, of auricular fibrillation

Webb, Floyd † Blytheville, Ark., Memphis (Tenn.) Hospital Medical College, 1913, served during World War I died in Chickasawba Hospital May 28, aged 65

Welfield, Samuel Estlin † San Francisco, College of Physicians and Surgeons of San Francisco, 1918 member of the Industrial Medical Association died June 28 aged 65

DIED WHILE IN MILITARY SERVICE

Manning, Joseph Crockett Jr. † Indianapolis born in St. Joseph Mo. May 29 1916 University of Tennessee College of Medicine, Memphis, 1942 fellow of the American College of Surgeons interned at the Methodist Hospital, where he was on the associate staff served a residency at the Indiana University Medical Center on the staff of the Indianapolis General Hospital joined the U. S. Air Force Reserve in March 1953 serving as a captain in charge of surgery at Tinker Air Force Base in Oklahoma City; died in Sheppard Air Force Base Hospital in Wichita Falls Texas April 3, aged 37, of bronchogenic carcinoma.

FOREIGN LETTERS

BELGIUM

Cancer of the Rectum.—At the Annual Meeting of the Belgian Surgical Association in May, 1954, in Brussels, Daumerie and Samain reported that primary or secondary cancer of the rectum is an epithelioma of which the exact location is of great importance because its malignancy is in inverse proportion to the age of the patient. Patients with cancer of the rectum are usually seen by the surgeon much too late. A fundamental principle upheld by Daumerie and Samain is that resection of the rectum must be wide and that sphincter preservation must be sacrificed to adequate resection. Surgery that aims to be curative is a major operation and should only be used on patients who can tolerate the risks attendant on such intervention. Resection is indicated when the tumor is inaccessible to rectal palpation or only its lower border can be felt. It is useless to try to preserve the anal canal if the cancer is felt at 5 cm from the anus. Amputation is preferable to resection because, in resection, there is a greater risk of recurrence. Surgeons who favor resection at any cost must not forget that continence does not necessarily follow sphincter preservation. Resection may be performed abdominally, abdominotransanally, or abdominosacrally. The only choice to be made in amputation lies in the location of the artificial anus (iliac anus or perineal anus). Cure of the rectal cancer is worth the inconvenience of an iliac anus, which, though definitely a major deformity, is practicable and allows better control than the perineal anus. The surgical treatment of cancer of the rectum is satisfactory in 60 to 80% of patients. With the use of antibiotics and the discontinuation of anastomoses by combined routes, the operative mortality has reached a low level. The improvement in long-term results stems from the abandonment of attempts to preserve the sphincter and from earlier diagnosis, resulting in intervention. Further progress will probably result from improved methods of diagnosis rather than from such surgical innovations as pelvic evisceration.

Consumption of Alcohol.—The *Revue de l'alcoolisme* of January-March, 1954, showed that in 1948 each Belgian consumed an average of 4.77 liters of wine and each Frenchman 150 liters. The annual consumption of beer at that time in Belgium was 133 liters per capita. This represents a decrease from 1931 when the annual consumption was over 200 liters per capita, but this tendency to decrease is compensated for by the present increase in the alcoholic content. According to these figures, the Belgians have the greatest per capita consumption of beer in the world, followed by the United States with 67.1 liters and the United Kingdom with 61.4 liters. The consumption in France is only 20.1 liters. In Belgium, the annual consumption of distilled liquors was 1.42 liters per capita in 1950 as compared with that of France (5.92 liters), Sweden (5.2 liters), and the United States (2.5 liters). On Jan. 1, 1950, Belgium had 82,666 cafes, restaurants, and hotels. Adding the 35,810 wine and spirit shops where drinking is not allowed on the premises, there is one place for every 63 inhabitants where it is possible to obtain liquor.

Disappearance of Malaria.—At the Fifth Session of Comparative Pathology in Strasbourg, Wanson stated that malaria disappeared in Belgium about 1870 despite the persistence of *Anopheles maculipennis atroparvus*, the principal vector in this disease. The disappearance of malaria was due to the use of damming systems to separate salt and fresh water (organization of the Wateringues), agricultural progress in the suppression of polders and the consequent reduction in anopheline vectors, an increase in the livestock preferred by anopheline mosquitoes, and the continued use of quinine in the treatment of intermittent fevers.

Bovine Tuberculosis in Human Beings.—The Belgian Society for Scientific Studies on Tuberculosis invited several French and Swiss authorities to discuss the importance of the bovine tubercle

bacillus in human lesions. Clinicians tend to believe too readily in the presence of bovine tubercle bacilli in the lesions they treat. In France, definite evidence of bovine tubercle bacilli was found in only 2 to 5% of tuberculous patients. Many cervical and mediastinal lymph node infections are caused by human tubercle bacilli. Since 1939 human infections with bovine tubercle bacilli have been greatly reduced by the removal of contaminated livestock. Human tuberculosis caused by the bovine bacillus can be confirmed only by isolation of the causative organism and its identification by its antigenic properties. The disease is seen oftenest in children under 5 years of age. The incidence of this type of tuberculosis is relatively high in England, Scotland, and Switzerland, less in Canada, insignificant in France, and nil in the United States. In all countries, infection by the bovine bacillus is commoner in rural than in urban areas. The prevention of human tuberculosis from bovine bacilli consists of prohibiting the consumption of unpasteurized milk and combatting bovine tuberculosis.

Physicians' National Service.—The Belgian Medical Federation has organized a physicians' national service that will assure medical care to all inhabitants of the kingdom whose incomes are lower than a certain amount. The medical fees will be determined for each region. All physicians are asked to participate in this service. The service will publish a list of the physicians who will participate to an extent that is either fixed or increases by a certain percentage, together with the hours and other conditions under which this care will be given. All laboring persons will thus be able to consult the physician of their choice at fixed fees and be assured of a completely free choice. This service was set up under the presidency of Dr. Craps of Brussels and the patronage of Professors Bordet, Van Genuchten, Dermon, and Le Platt.

Fluoridation of Drinking Water.—Hianne reported to the Belgian Hygiene and Social Medicine Association that, because the ingestion of small amounts of fluorine in childhood constitutes prophylaxis against tooth decay, the water supply of Namur, all of which comes from the same well, will be treated with sodium fluoride. The school children of this community will undergo regular radiographic examinations of their deciduous teeth and their six year molars. The roentgenograms will be compared with those taken in the schools of a neighboring community whose water does not contain fluorine.

BRAZIL

Antimalaria Campaign.—The results of the epidemiological survey carried out in 1947, shortly after the organization of the malaria division of the National Department of Health, and continued during 1948, showed that malaria was present in 67.2% of the 1,780 counties in Brazil, in most of them endemically and in the rest under the form of periodic epidemic outbreaks of varying severity. The endemic and epidemic manifestations of the disease spread over coastal districts along the 3,800 miles of the Atlantic seaboard and the valleys of the great and small rivers. Rio Grande do Sul (a southern state having the coolest climate), the semiarid inland districts of the north-eastern states, most of the Paraíba river valley in the state of Rio de Janeiro, and small isolated areas in several parts of the country were free from malaria. According to conservative estimates, a minimum of 6 million persons were affected by malaria every year (12,180 per 100,000 population in 1947), with about 65,000 deaths directly attributable to the disease (132 per 100,000). Before the founding of the malaria division, the antimalarial activities of the federal government were almost limited to the cooperation with state authorities in stamping out the most important outbreaks of the disease. Even before the end of the epidemiological survey, effective measures were begun against adult mosquitoes, consisting of house spraying with chloro-

phenothane (DDT) in the São Francisco river valley (states of Bahia, Sergipe, and Alagoas) and in the entire state of Rio de Janeiro, which surrounds the Federal District. The results of this experiment led to a rapid expansion of the program, which reached its highest point in 1950, when more than 2.6 million dwellings were sprayed in 836 counties covering an area of about 2,650,000 square miles (78% of the whole country) with a population of 25,311,000 (more than 48% of the population in that year). This house spraying was continued in 1951, 1952, and 1953.

A full report has been published by the Malaria Division. In the areas regularly sprayed with chlorophenothane, the transmission of malaria may fall to levels so low that the mere determination of hemoscopic indexes in samples will not give a true picture of the situation. It is important to maintain a routine search for suspected cases of the disease and to confirm the diagnosis through blood examination. In the large areas protected by chlorophenothane the incidence of malaria showed a reduction of about 95%. Better results were obtained, whatever the species of the vector, when two cycles of spraying were carried out in the year, as was done in seaboard districts, where the reduction reached 98 or 99%. In these districts where the transmission is mainly due to *Anopheles tarsimaculatus*, *Anopheles darlingi*, and *Anopheles albivittatus*, the houses alone were sprayed. In some inland districts, however, where cases of malaria still occurred, such factors as (1) extradomiciliary transmission by *A. darlingi*, even with two cycles of chlorophenothane house spraying in the year, (2) transmission by *A. darlingi* in areas where the houses have very irregular walls or no walls at all, hampering the protection from chlorophenothane, and (3) extradomiciliary and peridomiciliary transmission by *Anopheles cruzi* and *Anopheles bellator* in southern coastal districts could not yet be entirely eliminated. Cases of malaria occurred in houses internally sprayed with chlorophenothane where infected specimens of *A. darlingi* and *A. bellator* were captured on the external surfaces of the walls and on trees and bushes. As a contribution to the control of residual malaria in such difficult situations, Dr. Mario Pinotti, director of the Malaria Division, suggested the use of chloroquine mixed with table salt. The method was used in several districts in 1953 with encouraging results, the parasitoscopic index falling to 0.3, 0.1, and even 0%, in contrast with values of 6 to 25% in the same districts before the generalized use of chloroquine and salt or in similar areas at the same time where the method was not in use.

Vital Statistics for Rio de Janeiro.—Rio de Janeiro is a fast growing city. In 1940 it had 1,764,141 inhabitants, and in 1950 it had 2,413,152. The midyear population for 1954 has been computed to be nearly 2,700,000. The data for 1953, published in the bulletin of the Federal Bureau of Vital Statistics, show that the annual death rate from all causes declined from an average of 15.5 per thousand population for the five year period 1944 to 1948 to 11.7 in 1953. On the other hand, the annual birth rate increased from an average of 20.8 per thousand to 26.1 for the same periods. Computing a ratio between the total number of live births and the number of deaths from all causes, we get a vital index whose value increased from 1.33 for the period 1944 to 1948 to 2.23 for 1953. The infant mortality rate for 1944 to 1948 was 128 deaths per thousand live births and for 1953, 109. The maternal mortality, which was 5.5 puerperal deaths per thousand live births for the period 1944 to 1948 was 3.5 in 1953. The greater part of this reduction was due to the decline in puerperal infection that resulted from the increasing use of antibiotics. Deaths from tuberculosis of all forms declined from 295 per 100,000 population in the period 1944 to 1948 to 94 in 1953. Deaths from typhoid fever fell from 7.9 per 100,000 to 1.5 in the same periods. The corresponding figures for the several forms of dysentery were 8 deaths per 100,000 and 5.5. Deaths from whooping cough dropped from 7.4 per 100,000 to 2.6, from measles increased from 2.8 to 5.2, and from diphtheria decreased from 4.3 to 3.4. Deaths from poliomyelitis which formerly had been relatively rare with annual rates of about 0.2 per 100,000, increased to 1.4 in 1953, deaths from heart diseases increased from 158 per 100,000 to 216, cancer, from 18.2 per 100,000 to 23.6, and motor vehicle accidents, from 68.1 per 100,000 to 83.1. Deaths from diabetes remained almost unchanged, fluctuating between 6.8 and 8.9

per 100,000. The death rate from appendicitis showed a remarkable reduction, from an average of 5 deaths per 100,000 in the period 1944 to 1948 to 1.9 in 1953.

ENGLAND

Another Report on General Practice.—In December, 1950, the Central Health Services Council appointed a committee "to report on whether the existing arrangements for engaging in general practice under the National Health Service are such as to enable general medical practitioners to provide the best possible standard of service." The committee, made up predominantly of medical men and including consultants and general practitioners, has now presented its report. This starts with the categorical statement that general practice is fundamental to the best practice of medicine and to the best interests of patients. It cannot be replaced by a congeries of specialisms." On July 1, 1952, the latest date for which full figures are available, 20,162 physicians were engaged in general practice in the National Health Service in England and Wales. These included 17,204 persons providing 'unrestricted' general medical service, 56% of whom were members of partnerships, the rest working alone. Provisional figures for 1953 suggest that the proportion in partnership has risen to over 60%, and this increasing co-operation between physicians is one of the most encouraging developments in the National Health Service.

In the committee's view the range of work of a general practitioner should normally include "(a) Continuing responsibility of the health of his patients (b) The diagnosis, treatment and management of such illnesses as can properly be treated in the patient's home (c) When the patient's condition requires it, reference to hospitals or specialists for diagnosis or treatment or both and at the same time the forwarding of the relevant details of such patients (d) Emergency treatment. This includes the emergency treatment of any patient and is not confined to those on the doctor's list. (e) Supervision of the convalescent period and return to work. (f) The practice for his patients of preventive medicine and of health education (g) The giving of certificates and other administrative and legal requirements, for example, notification of disease when statutorily required. *It would always assume* (h) Proper and sufficient arrangements for examining patients (i) Clean, pleasant and adequately equipped accommodation (j) Association with hospitals and local authorities."

Referring to the frequent assertions that since the introduction of the National Health Service there has been an increase in the number of items of service rendered by general practitioners to their patients, the committee suggests that though this may be so, the increase has not been very great and has not been evenly distributed." Figures supplied by the registrar general indicate a steady increase in the proportion of consultations taking place in the physician's office as compared with those in the patient's home and in the number of women and children treated. The committee believes that the arrangement whereby a family has over a period of years, its own doctor is an ideal one both for the doctor and the family, ensuring as it does continuity of treatment for the latter and affording the doctor valuable knowledge of the general background of the patient." At present about two-thirds of a physician's patients "may regard him as the family doctor, at least to the extent that father, mother and children in that family are all on the doctor's list." The committee "does not think that in general the advent of the National Health Service has disturbed the relationship between doctors and their patients. The relationship is good in some respects indeed it was found to be better than before, and this was attributed to the absence of the money bar and to increased cooperation between doctors."

In discussing the organization of general practice, the committee emphasizes the need for ancillary help in the practice and for an appointment system. "A doctor should not himself undertake what can be properly delegated to a nonmedical assistant. The provision of such help is easier to achieve in partnership and within groups of doctors because its cost can be shared. This is indeed an important advantage of group practice." Although the committee is enthusiastic about the

advantages of partnerships and group practice, it "does not share the view that single-handed practitioners must as soon as possible be forced to link themselves up in formal groups" Of group practice, it says that normally the group should consist of three to six persons

Among the difficulties encountered in establishing health centers under the National Health Service is the fact that the local authority is in control by virtue of being responsible, under the terms of the relevant act, for supplying them "This at once causes misgivings in the minds of many general practitioners" Furthermore, once a practitioner has given up his private office for a suite in a health center, "he will have lost much of his independence because his patients may become attached to the centre and would not then, in the main, follow him back to other premises if he decided to break his connection with the centre" Conversely, many patients who have become used to visiting a physician at his own office might not be prepared to follow him to a health center and might transfer to a neighboring practitioner The committee comments "It could be argued that all these difficulties should be forcefully swept aside, but unfortunately they have their foundations in the hard facts of history and of intelligent self-interest In practice, the doctor, as an independent contractor under the arrangements for general medical services, is having to gamble on the success of his step if he agrees to transfer his practice to a health centre It is a speculative move in which he naturally requires assurances on charges, control, powers of dismissal and so on Many of the advantages both to doctors and to patients, which have in the past been urged in favour of health centres, may it be hoped be more easily secured through the evolution of group practices, consisting of doctors who have chosen to work together in communal premises which they own themselves"

In some practices, particularly in industrial areas, office accommodations are not all they should be This is due in part to the postwar difficulties in any building program, no matter how all Private building work and alternative accommodations now available, and, therefore, it is not now unreasonable to urge improvements in office accommodations The gross remuneration of general practitioners is at present calculated to include 38.7% for practice expenses, a large part of which is spent for office accommodations and equipment "Only insistence of adequate standards can provide a proper safeguard against the otherwise paradoxical situation that the less a doctor spends on his practice expenses—which in many cases may mean the poorer his accommodations—the greater proportionately are his personal rewards from practice" Executive councils have the power to inspect office accommodations, and these councils are urged to make the necessary arrangements to ensure that the accommodations provided by physicians include (1) running water (or at least a wash basin with water), soap, and a towel in the consulting room, (2) a separate examining room or screened-off examining table, (3) a waiting room large enough to seat in reasonable comfort all who may need to wait, except in special circumstances such as a severe epidemic, (4) a bright and pleasant, well-lit, well-warmed, well-cleaned, and well-ventilated atmosphere, (5) furniture of reasonably good quality and domestic rather than institutional, and (6) access for patients to a toilet and wash basin

The committee considers that a period of assistantship is normally the best introduction to general practice The number of assistants employed by general practitioners in the National Health Service is around 2,000 It is admitted that there has been some abuse of the arrangements whereby physicians employ assistants and take on partners, and recommendations are made for removing these One, for instance, is that in a partnership of two the agreement should normally provide for at least a third share for the new partner at the end of two or three years The committee considered evidence in favor of methods of remuneration other than by capitation fees, namely, by salary, by sessional fees, or by fees for items of service, but came to the conclusion that "the present method by capitation fees is the most satisfactory Since it does not preclude the practitioner from doing other work outside general medical service under the National Health Service, it has also the advantage that it means that no special limit is set to the general practitioner's remuneration"

On the subject of the maternity medical service, the report states that "quite apart from the question of economy and expedience, the Committee thinks it is desirable that more normal confinements (except many primiparae and women who have had four or more children, amongst whom unforeseen abnormalities more commonly occur) should, if the housing and other relevant social conditions are satisfactory, take place in the patient's home" Of the confinements that take place in a hospital, it is considered that many could be dealt with by general practitioners if hospital boards would set aside hospital accommodation for this purpose The committee could find no evidence that the provision of maternity medical services by general practitioners had decreased since the inception of the National Health Service

The committee categorically rejected the repeated demand that a person, although electing to obtain medical treatment as a private patient, should nevertheless be allowed to obtain drugs under the National Health Service "The Committee decided that it is right to regard prescribing as an integral part of general medical services and therefore does not recommend that doctors be allowed to use National Health Service prescription forms for their private patients" On the subject of private practice in general, the view is expressed that "the opportunity for private practice for doctors in the Service remains as part of the freedom both of the doctor and of the patient This is, in the Committee's view, right" Most patients, however, have elected to come into the service, and physicians have accepted the full responsibility of ensuring that patients in the service are offered the highest standards of medical practice

A strong plea is made for the wider acceptance of the suggestion that "general practitioners should have at their disposal hospital beds where they can retain responsibility for their patients, many of whom are now admitted to hospital, not primarily for medical reasons, but because home circumstances do not permit proper general, including nursing, attention Consultant advice would be available when necessary" A plea is also made for the wider adoption of the system of clinical assistantships for general practitioners provided "the hospital should not regard the general practitioner who is a clinical assistant simply as a useful additional pair of hands" The committee also takes the view that radiological and pathological facilities should be directly available to practitioners It reports that in 1952 nearly half the hospitals with radiological facilities made these available to general practitioners directly and carried out 741,000 examinations for them, an increase of 11% over 1951 Fifty-five per cent of pathology laboratories gave similar facilities—554,000 examinations in 1952, an increase of 21% compared with 1951

Finally, on the subject of undergraduate education, the committee consider that "a student should be given as much opportunity to study the scope of general practice as he is to learn the scope, for example of surgery or preventive medicine" It is also recommended that selection committees for the admission of students to medical schools should include in their membership a physician engaged in, or with personal experience of, general practice

Smoking and Cancer of the Lung—There are several references to smoking and lung cancer in the annual report of the British Empire Cancer Campaign covering the year 1953 In introducing the report at the annual meeting, Prof F Dickens stated that the importance of cigarette smoking causing cancer of the lung is not yet known and that the situation is complicated by the fact that primary cancer of the lung occurs among non-smokers as well as smokers A further complication lies in the statistical association now found between the incidence of lung cancer and the density of population or its "degree of urbanization" Since campaign research workers have found that town air contains appreciable amounts of known chemical carcinogens, as well as other irritant substances, it is a reasonable hypothesis that the prolonged inhalation of such air, either alone or combined with tobacco smoking, may be conducive to pulmonary cancer

At the London Hospital, R H Gwynn and M N Salaman have failed to produce tumors in mice from the weekly or twice weekly application to their backs over a period of 23 weeks of (1) a methanol extract of whole, unburnt cigarettes ("Virginian"

brand), (2) the same extract preceded by initial treatment with 9 10-dimethyl-1 2-benzanthracene, or (3) 0.1% purified nicotine in acetone

At the University of Leeds a machine has been produced capable of smoking 36 cigarettes simultaneously at about the same rate and the same temperature as in man. Two extracts of cigarette smoke have been produced: (1) the condensate from the whole smoke dissolved in acetone and (2) the condensate dissolved in benzene, washed with acid (to remove base), alkali (to remove phenols), and water, and the solvent removed under pressure. This produced 18 gm of a semisolid gum from 10,000 cigarettes. These extracts were tested in mice and rats for seven months, but no tumors appeared. Also at the University of Leeds, work has been carried out on the radioactivity of tobacco ash and smoke. The mean radioactivities per cigarette were equivalent to 25 mg, 28 mg, and 6 mcg of potassium for the tobacco, ash, and smoke, respectively. The difference between the radioactivities of the tobacco and the ash are not significant. The report concludes that such radioactivity as is present in cigarette tobacco remains in the ash and that little, if any, is transferred to the smoke. Taking 6 mcg as representing the maximum radioactivity (as potassium) that could be transferred to the lung by one cigarette and assuming that in the worst case this could lodge as a single particle, the dosage to cells adjacent to it can be shown to be of the order of 2 to 3 mr per week. This is about equal to the dosage that body cells receive continually from their average potassium content, local rays, and cosmic rays and is at least 10,000 times less than the dosage involved in cases where tumors have been known to be due to deposition of radioactive materials in the body.

In the cancer research department of the Royal Beatson Memorial Hospital, Glasgow, the treatment of CBA mice with commercial nicotine by skin application or orally did not result in an increased incidence of pulmonary tumors, though many animals survived more than two years of treatment. Application of a crude preparation of oxidized nicotine to the skin of 14 mice of a mixed stock gave adenomas of the lung in 7 animals. A comparison of chromatographic fractions of cigarette tobacco and of the acid extract of tobacco smoke showed that the stained chromatogram of the more volatile and soluble fractions of tobacco showed spots provisionally identified as nicotine and other related alkaloids, while similar fractions of the acid extract of tobacco smoke, apart from nicotine, contained less stainable material. The less soluble fraction of the tobacco smoke extract, on the other hand, contained almost as much stainable material as the corresponding tobacco extracts, although the rate of flow when developed on the chromatogram varied. The rate of flow of these spots and the color after staining with *p*-aminobenzoic acid appear to indicate the presence of oxidation products of nicotine and related alkaloids in these tobacco smoke fractions. Tobacco smoke tar and tobacco resin were also examined by paper partition chromatography, and the presence of nicotine was identified in both fractions.

Hospital and Community—A detailed report of an investigation into various aspects of hospital care by Prof. T. Ferguson and Dr. A. N. MacPhail of the department of public health of the University of Glasgow has been published under the aegis of the Nuffield Provincial Hospitals Trust. Two separate but closely integrated studies are included in the report. One was of two "mixed" Scottish counties with a combined population of about 500,000 and having within the county boundaries some 57 hospital beds per 1,000 population (apart from beds for the treatment of mental illness) as well as easy access to city hospital services. It was found that in these counties one person in every seven received hospital treatment—inpatient, outpatient or both—in the course of a year. Hospital morbidity was closely correlated with social and environmental conditions. Thus, respiratory disease, injuries, and disease of the skin and cellular tissues contributed more heavily to hospital load in the registrar general's social class 5 (unskilled laborers) than in the others. Conversely, duration of stay in a hospital in most disease groups was appreciably shorter among patients from social classes 1 and 2 (the executive and professional classes) than among patients from class 5.

The second study was of 705 men discharged after treatment in medical units in one of four hospitals for acute conditions in the west of Scotland. The clinicians in charge of these patients estimated that in just over 10% some preventable factor had made a major contribution to the breakdown responsible for admission to hospital. A follow-up showed that two years after discharge from the hospital, 171 had died and 60 could not be traced, the remaining 474 were seen in their homes. Of the 171 who had died, 119 were under the age of 65, and 70 were under the age of 55. Of the 474 interviewed, 111 were regarded as cured, 193 had continued to maintain the improvement achieved in the hospital, 106 had not improved and their medical condition was still unsatisfactory, and 64 were worse. In other words, two-thirds of those still alive two years after leaving the hospital had derived "substantial and lasting benefit" from hospital care. Over a period of seven years—five years before this study was instituted and two years after discharge from the hospital—118 of these 474 men had been admitted to the hospital on three or more occasions. Readmission was more frequent if home conditions were not good, and a relatively high proportion of the men who were not at work two years after leaving the hospital came from poor homes. Just under 20% of those who were at work at the end of two years were in unsuitable jobs. Since leaving the hospital, 106 of the 474 men had never worked.

The authors sum up as follows: "It is doubtful whether results substantially better than those presented in this report can be obtained with things as they are. Nor would mere multiplication of costly hospital beds within any reasonably practicable limits of itself effect great improvement, without more help in the transition from hospital to everyday life, without decent living conditions and reasonably suitable work to which the patients can return on leaving hospital, even the most careful and enlightened treatment is not likely to achieve a full measure of lasting benefit. It is important to preserve all that is best in our hospital tradition, but equally it is important to try to view hospital care in a true perspective."

Antimalarial Drugs—The malaria subcommittee of the Colonial Medical Research Committee has published revised recommendations for the use of antimalarial drugs (*Lancet* 1954). For causal prophylaxis they recommend chloroguanide (Proguanil) or pyrimethamine. The order of preference for suppressive drugs is chloroguanide, pyrimethamine, chloroquine, Amodiaquine, quinacrine (Atabrine), and quinine. A warning is given of the possibility of resistance to chloroguanide and pyrimethamine, especially if they are used indiscriminately as therapeutic agents. Cross resistance has been shown to exist between chloroguanide and pyrimethamine, so that if resistance to either becomes apparent a change of medication to chloroquine, Amodiaquine, or quinacrine is indicated. For the treatment of an overt attack in nonimmune subjects, chloroquine or Amodiaquine is recommended. "Neither Proguanil nor pyrimethamine is sufficiently rapid in action to warrant their use in the treatment of malaria in nonimmune subjects." For the treatment of the overt attack in partially immune subjects such as the indigenous inhabitants of malarious districts, a single-dose treatment with chloroquine, chloroguanide, Amodiaquine, or quinacrine has proved effective. For emergency treatment, as in pernicious forms of malaria, quinine dihydrochloride intravenously, quinacrine methane sulphonate intramuscularly or chloroquine intravenously or intramuscularly is indicated, oral administration should be substituted as soon as possible. For radical cure of vivax or malariae malaria, primaquine naphthoate or primaquine should be used. During an overt attack a course of treatment with a schizontocidal drug must also be given. Careful supervision is necessary over patients taking any of the 8-aminoquinoline drugs, such as primaquine or primaquine because of the occasional unpredictable occurrence of acute intravascular hemolysis with or without hemoglobinuria. The 8-aminoquinolines are the only drugs that are able to destroy the sexual forms of *Plasmodium falciparum* in the peripheral blood. Chloroguanide and pyrimethamine have no demonstrable action on the gametocytes in the blood but both have the property of preventing them from undergoing full development in the mosquito so that mosquitoes feeding on patients taking either of these drugs are unable to transmit the disease to others.

Homologous Serum Jaundice—Several years ago a survey was instituted by the medical research council of the Ministry of Health and the department of health for Scotland with the object of comparing the incidence of homologous serum jaundice after administration of dried, irradiated plasma with that after administration of (1) dried, unirradiated, small-pool plasma, prepared concurrently by the usual methods in use since 1945, and (2) whole blood alone. The results are shown in the following table, taken from a preliminary report just published (*Lancet* 2 1328, 1954)

Transfusion Fluid	No of Patients			Deaths Attributed to Homologous Serum Jaundice
	Treated with Transfusion	Jaundice of Doubtful Cause	Homologous Serum Jaundice Attributed to Transfusion	
Blood	2 539	4	4 (0.16%)	0
Dried small pool plasma with or without blood	867	0	1 (0.12%)	0
Dried irradiated large pool plasma with or without blood	984	5	39 (3.96%)	1

A comparison of the results with kaolin-treated filtered liquid plasma and with whole blood showed that of 1,387 patients given whole blood, jaundice of doubtful cause developed in 3 and homologous serum jaundice attributed to the transfusion developed in 5 (0.36%), the comparable figures for the treated plasma were 1,366 patients, 8 of whom had jaundice of doubtful cause and 16 (1.17%), jaundice attributed to the transfusion. There were no deaths attributable to homologous serum jaundice in either series. It was concluded that the exposure of plasma to ultraviolet light under the conditions used did not inactivate the causative agent of homologous serum jaundice.

ITALY

Uncommon Findings in Hereditary Ataxia—At the meeting of the Pistoia Medical Academy in December, 1953, Prof. Mattioli Foggia discussed three patients of the same family who had hereditary ataxia. Two other close relatives of the patients had died young with the same condition. This began gradually in all the patients with a staggering gait, a decrease of energy, physical decay, and a speech defect. The patients were a mother, her son, and her daughter. The condition had appeared in them at the ages of 60, 30, and 19 years, respectively. Some remissions had occurred in all three, nystagmus and lesions of the pyramidal pathways were absent, the sphincters were not involved, and all had a staggering gait without Romberg's sign. An intention tremor was present in the mother and the son but not in the daughter, and the mother had a congenital talipes equinus-like malformation of the foot and marked amyotrophy of the hands. Roentgenograms of all three patients showed no hypoplasia of the posterior cerebral fossa. Optic atrophy and syphilis or other intoxications were also absent. The differentiation from familial multiple sclerosis and the atypical forms of hereditary ataxia (Marie-Friedreich) and problems of neuropathology related to the genetic mechanism of these forms of hereditary ataxia were considered.

One of the problems was to establish whether in these patients the ataxia was associated with myotonia congenita or whether it was a polymorphic, pathological muscular manifestation that appeared with a myotonia congenita-like disease in the daughter and with a myasthenia-like disease and pronounced amyotrophy in the thenar and hypothenar eminences in the mother. The speaker could not find a report of any patient in whom myotonia congenita or myasthenia was associated with hereditary ataxia. Another problem was to determine whether in these patients the condition was primary or secondary. With a cathodal oscillograph an electromyographic test of the flexor and extensor muscles in the areas of myotonic disturbances seen in the daughter was made. The findings indicated a lesion in the flexor muscles, manifested by groups of potentials that were

higher and less frequent than normal. In the periods of rest there were small action potentials due partly to reflex phenomena and partly to local muscular activity. In general, the myogram was that of a tetanus due to motor units acting in a nonsynchronized manner with some episodes of fasciculation.

In the extensor muscles, the activity of the single units was even more subdivided into partial episodes, and single potentials with elevated voltage were observed. The slowness of the activity of the extensor muscles during the distension of the fingers with thrusts of long-lasting action potentials was characteristic. In some instances discharges were observed after relaxation, as felt by the patient. Considering the fact that primary impulses capable of regulating the normal behavior of the innervation of the antagonistic muscle groups derive mostly from spindles and tendinous receptors, it may be that, in the presence of a lesion of the receptors in a muscle, the syndrome assumes the characteristics of cerebellar deficiencies, but the deficit represented by ataxia should in reality be considered secondary rather than primary. These three patients had a peripheral myopathy that exerted a secondary action on the spinocerebellar system and on that of the tonic mesencephalic nuclei.

Acute Erythropathy—At a later meeting of the academy in February, Professor Di Guglielmo described a case of acute erythropathy due to chronic benzolism that presented alterations of the medullary erythropoietic system, some of which had never before been described. The patient was a printer in whom the condition had appeared suddenly, there was fever and progressive anemia, which led to death within one month. The diagnosis was based on the qualitative and quantitative alterations of the hemopoietic system. Sternal puncture revealed many cellular elements, mostly of the erythrocytic series, and this indicated a process of hyperactive erythropoiesis. Some of the erythroblasts were three or four times the normal size. Polyploid cells with two to eight nuclei and cells with the so-called secondary nuclei, nuclei divided into various lobes connected by bridges, or gigantic nuclei were seen.

These alterations were present not only in the more immature elements, as is usually the case, but also in the cells in which the hemoglobin was beginning to penetrate into the cytoplasm. These alterations suggested a blastomatous process, some authors speak of erythroblastoma when such lesions are present. Similar findings may be found in conditions that have nothing to do with tumors (such as pernicious anemia and hyperplastic processes of the myeloid tissue). They may also be found as an atypical hereditary trait in normal persons. These alterations are reversible in some patients. In this patient the findings described had disappeared almost entirely after 19 days. One day before his death the number of leukocytes increased from 6,000 to 280,000 per cubic millimeter. The starting point of these acute hemopathies is medullary aplasia. This is followed by the mobilization of extramedullary hemopoietic centers with the production of blood cells the maturation of which may be blocked. Centers of compensatory hyperplasia may be found in the bone marrow.

Intramedullary Fixation—At a meeting of the Salento medical and surgical society in January in Brindisi, Professor Montemartini reviewed the various means of treating ununited fractures and said that crossed temporary intramedullary fixation is less dangerous than other techniques. He uses thin, inoxidizable metal wires, thus preventing those lesions of the marrow that are produced by thick nails. He concluded that the open treatment with temporary intramedullary fixation should not be used routinely in the treatment of ununited fractures and pseudoarthrosis but only as a supplementary technique. He advised continued observation so that the forces that might lead to a changed position of the fragments could be promptly neutralized. With this treatment, disturbances in callus formation and consolidation are reduced to minimum, damage to the medullary cavity is avoided, and fixation is controlled with roentgenograms.

Current Status of the Thymus—At a meeting of the Tortona medical and surgical society in February, Professor Copello stated that little is known about lesions of the thymus. From the anatomic standpoint the thymus is a gland of internal secretion, since it is a lymphoepithelial formation with a connective tissue capsule, has a cortical substance with many leukocytes and a medullary substance with Hassall's corpuscles, but lacks

an excretory duct. From the functional standpoint, however, there is not as yet sufficient evidence to justify considering the thymus a gland of internal secretion. The physiological involution of the thymus immediately after the period of youth proves only that, if it does have an endocrine action, this is linked to the growth period. Experimental studies have shown that the growth of tadpoles favorably influenced by the presence of thymus extracts is due to the presence in such extracts of fats with a low molecular weight as well as to the concurrent presence of nutritious animal and vegetable substances. On the other hand, the absence of the gland or the abolition of its function in young persons has had no definite adverse effects on physical and mental development.

The genital organs and the adrenals exert a direct action on the volume of the thymus (if these do not function, the thymus becomes enlarged), but the thymus does not exert any direct action on the genital organs or the adrenals. Hyperfunction of the thyroid and the anterior lobe of the hypophysis causes hypertrophy of the thymus, and their hypofunction causes atrophy of the thymus, but the thymus cannot modify the function of these endocrine glands. In view of these facts and the fact that the thymus is not indispensable to life, it seems questionable to ascribe to it a precise function. Moreover, the anatomic modifications of the thymus associated with myasthenia gravis do not clarify the problem since the cause of these alterations is obscure. They may be caused by the ionic balance, primary muscular alterations, or endocrine alterations in several glands.

It is certain only that the thymus has a lymphocytic function. As regards treatment it is still debatable whether an enlarged thymus should be irradiated. This treatment may relieve some patients who present evidences of lymphatic diathesis.

Biliary Pathways.—At a meeting of the Filippo Pacini medical academy of Pistoia in February, Professor Torsoli and his associates discussed the modern cholangiocholangiographic tests used to study the biliary pathways. The new synthetic preparations for cholangiography have led to a marked decrease in the number of noninformative cholangiographic findings. Those that can be given intravenously have made it possible to carry out cholangiographic studies in a patient whose gallbladder has been removed or is functionally excluded. Iodopanoic acid (Telepaque) is a tri iodine and is given by mouth. When Biligrafin, which has a higher iodine content and is given intravenously, is used during the painful attacks, not only the calculi but also the dyskinetic movements that cause the pain can be seen. Often the calculi and the painful spasm were found not to be in a close topographical relationship.

The speakers stated that most syndromes involving biliary dysfunction may be studied radiologically not only because it is possible to visualize the excretory ducts but also because it is possible to inject the gallbladder in patients in whom previous cholangiographic findings have always been noninformative. Only with the new intravenous test is it possible to distinguish cholelithiasis from hepatic dysfunction. The investigation of the latter by means of the elimination of the contrast medium has given results that agree with those deduced from such tests as the Quick test and the Bufano test. The new contrast mediums may cause cloudy swelling and fatty degeneration of the liver and kidneys, but only when given in twice the regular dose. The damage, however, is reversible in the early stages and should not, therefore, contraindicate the use of these drugs.

Studies on the Liver Function.—At a meeting of the Pavia medical and surgical society in February, Professor Didone discussed the results of some studies on the function of the liver in patients with abdominal diseases requiring operation. In 75 such patients a cephalin-cholesterol flocculation test, thymol turbidity test, determination of total cholesterol, and other tests were done to evaluate the frequency and the nature of the liver dysfunctions before operation. In 10 patients with common duct stones the chief alterations were attributable to obstruction, and signs of hepatocellular damage were few. These were evident, however, in varying degree and intensity in five patients with neoplastic biliary obstruction. This is ascribed to the fact that in some patients the cancer does not lead to complete obstruction of the extrahepatic biliary pathways. Patients with lesions of the gastrointestinal tract presented a high rate of hepatic dys-

function, 12 patients with gastroduodenal ulcer had signs of slight hepatocellular alteration. This was even severer in 12 patients with neoplasm of the stomach, 9 with neoplasm of the rectum, and 3 with neoplasm of the colon. Metastases to the liver secondary to gastrointestinal neoplasm in 10 other patients did not cause true alterations of the hepatic function. Professor Didone emphasized the importance of the functional investigation of the liver in patients with abdominal diseases requiring operation as well as in patients with diseases of the biliary pathways.

Renal Biopsy.—At a meeting of the Rome Medical Academy in February, Professor Malizia and his associates reported on the indications and usefulness of renal biopsy in the diagnosis of intercapillary nodular nephrosclerosis. The technique used by them consists in the visualization of the kidney by means of retroperitoneum and the removal of a specimen with Sylverman's needle under visual control. In one patient they made a diagnosis of diabetic nephrosis despite the fact that the clinical findings and course were not typical of this condition. Renal biopsy is used not only in the diagnosis of diabetic nephrosis but also to study the course of the disease and to guide its treatment. It should be used, however, only on patients whose condition cannot be diagnosed clinically.

Jaundice in Patient Taking Phenylbutazone.—At the same meeting Professor Luchini and his co-workers reported on a case of jaundice that developed during a course of phenylbutazone therapy. This is the 10th such case reported in the world literature. The patient, who had a severe form of chronic rheumatism was receiving phenylbutazone in regular doses. Shortly after the treatment was started, gastric disturbances appeared and were followed by jaundice, subfebrile temperature, and pains in the right hypochondrium. Because this was believed to be a toxic jaundice caused by the phenylbutazone, the administration of the drug was stopped, but when the jaundice continued for a length of time longer than is usual in jaundice caused by drugs a liver specimen was obtained for biopsy. This revealed histological alterations characteristic of viral hepatitis. When the signs of liver impairment had disappeared, the administration of phenylbutazone was resumed. This resulted in a marked improvement in the joints and no return of the jaundice. From this evidence it does not seem likely that the jaundice was caused by the drug.

Pseudohemicranial Headaches.—At a meeting of the medical society of Leghorn, Professor Greppi of Florence distinguished the true essential hemicrania of youth from the analogous syndromes that are caused by vascular lesions and dysfunctions. The latter are commoner in presenile and senile patients. The so-called pseudohemicranial headaches belong in a third group. These appear in the presence of inflammatory or productive processes in the endocranial and extracranial arteries. An arteritis or thromboangitis localized in the superficial temporal artery and in other branches of the external carotid may be seen in old patients in whom atheromatous degeneration or arteriosclerosis with or without hypertension is present. Analogous findings may be caused by arteriosclerosis in elderly persons in whom the clinical characteristics of histamine cephalalgia appear even without the inflammatory or thromboangiitic aspect of the process.

Exfoliative Cytology in Gynecologic Conditions.—Professor Laudadio reported on exfoliative cytology at a meeting of the Tortona medical and surgical society. He said that the histiocytes found in smears from the female genital tract may easily be mistaken for neoplastic cells. Despite false positive and false negative reports, the method is of great value, especially if it is used as a supplement to other methods such as biopsy. The cytological examination has its greatest value in the detection of cancer in the 0 phase (called intraepithelial or preinvasive) and in the 1 phase which in its subgroup *a* includes the subclinical or asymptomatic cases. At the meeting of the Foggia medical and surgical society in February, Professor Mele said that exfoliative cytology as a means of early diagnosis of malignant tumors of the female genital tract has become the commonest diagnostic method because of its simple technique and its certain results.

CORRESPONDENCE

RADIOLOGICAL TECHNICIAN

To the Editor—X-ray technicians on the west coast of the United States were recently circularized by an organization offering memberships that authorized placing "R T" after the name of the technician. This was to signify "Radiological Technician." These memberships were to be granted merely on application and the payment of a fee. There was nothing in the structure of the organization that would guarantee any particular competency in radiological technique on the part of the members. The consummation of this scheme would have, of course, confused the issue completely in the field of radiological technique in that, as is explained below, "R T" has attained a well-defined meaning within the medical and hospital world. Fortunately, due to an inadequate response, the organization that considered entering into the program abandoned its plan. The American College of Radiology believes, however, that for the record and in support of the American Registry of X-Ray Technicians, which has since its inception operated under medical guidance, the dissemination of the following statement is desirable.

For the information and guidance of the medical profession in the United States, X-ray technicians, hospital personnel and other interested persons, the American College of Radiology offers the following statement:

The American Registry of X-Ray Technicians, the headquarters of which is in Minneapolis, and whose executive secretary is Mr. Alfred B. Greene, R.T., is the sole organization offering certification or registration of X-ray technicians recognized by the American College of Radiology and the American Medical Association. The American Registry of X-Ray Technicians offers an opportunity for examination after the technician has followed a course of training approved by the American Medical Association, the American College of Radiology and the American Society of X-Ray Technicians. These examinations are conducted by members of the American College of Radiology or trustees of the American Registry of X-Ray Technicians. Upon successful completion of examination, the technician is registered and is authorized to place after his or her name the designation R.T. (Registered Technician).

It is the considered opinion of the American College of Radiology that the designation R.T. has, in the eyes of the medical profession, X-ray technicians, hospital personnel and the public, acquired a well-defined meaning signifying the successful undertaking of a given course of training, a specific level of achievement in X-ray technique, adherence to a well-defined code of conduct, and passage of a supervised examination. The College would lament and discourage the action of any organization or person offering registration of X-ray technicians merely upon application rather than examination, beclouding the meaning of "R.T.," Registered Technician, by attributing to the initials some other meaning such as "radiological technician", and misleading those concerned with competence in X-ray technique by sponsoring registration outside the purview of recognized medical and X-ray technician organizations.

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BALLISTOCARDIOGRAPHY

To the Editor—In their article, "Use of Ballistocardiography in Evaluation of Paroxysmal Rapid Heart Action," in *THE JOURNAL*, July 3, 1954, page 897, Drs. Selinger and Levin state in the discussion following case 1: "It is known that paroxysmal auricular tachycardia may be the first sign of coronary artery disease. If attacks of paroxysmal auricular tachycardia develop in a man past 40, one must suspect coronary disease as the cause." I do not believe that this represents the opinion of most cardiologists. The authors' opening paragraph expresses rather, I believe, the consensus, that is, that tachycardia "is fundamentally a functional disturbance, but one occurring in [italics mine] hearts that are structurally either normal or abnormal." Paroxysmal auricular tachycardia is found far more often in normal than in damaged hearts. Even in the middle-aged, the finding of paroxysmal auricular tachycardia tends to reassure me that I am more likely to find the heart organically sound. One does not suspect coronary artery disease but looks rather for anxiety, tension, or fatigue as the probable cause. Prinzmetal, whom the authors cite, says paroxysmal auricular tachycardia "is essentially functional in origin. When it occurs in diseased hearts

there is no constant association with any specific lesion." Although it may appear as the first sign of coronary artery disease, it is apparently coincidental (*The Auricular Arrhythmias*, Springfield, Ill., Charles C. Thomas, Publisher, 1952, p. 46).

At the Los Angeles County General Hospital in 1945 the arrhythmias found in 1,247 electrocardiographic records of patients with acute myocardial infarction were reviewed. Paroxysmal auricular tachycardia was found only five times—surely no more than a chance relationship. It is doubtful that the relationship is any different in coronary artery disease without infarction (See my article in *Am Heart J* 37:425 [March] 1949). On the evidence, therefore, paroxysmal auricular tachycardia appearing in a middle-aged patient should not lead one to suspect coronary artery disease as the cause. If they coexist, it is coincidental.

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FUNCTIONS OF A MORTALITY COMMITTEE IN A COMMUNITY HOSPITAL

To the Editor—One of the most difficult requirements of the Joint Commission on Accreditation of Hospitals is that the hospital staff shall discuss deaths. Such discussions are especially hard to conduct in the community hospital, where individual physicians are, naturally, reluctant to have the cases treated by them discussed before an open staff meeting.

To fulfill this requirement fairly and reasonably, the mortality committee is composed of representatives from the medical, surgical, obstetric, and pathological departments. Each death during the month is listed with physician, autopsy findings, date of admission, and date of death. This information is compiled before the staff meeting and handed to physicians at the meeting. Any staff member is welcome and encouraged to raise any discussion concerning these deaths. Obviously, it is impossible and impractical to discuss each death in detail, so deaths are placed in two categories.

For category 1, the mortality committee may each month select from the list of all deaths one or two that should be discussed because of their special interest or teaching value. The attending physician is asked to prepare a summary that is also handed to physicians at the time of the staff meeting. The attending physician then reads this summary at the staff meeting, and the pertinent points in diagnosis and treatment are discussed. Should a physician fail to prepare such a summary or fail to present it, a member of the mortality committee prepares and reports the case.

Category 2 consists of all deaths that occur following operation. Thus, a summary is automatically required for any patient who was operated on and who died during that admission. The operating surgeon presents the summary. Again, if the physician fails to write the summary, it will be prepared and reported by the mortality committee.

A mimeographed paper listing the categories is prepared each month and presented to each physician at the staff meeting. The chairman of the mortality committee leads the critique and encourages any discussion on questions regarding the deaths, which are usually not of sufficient interest to warrant lengthy discussion. In the category 1 type of deaths, which are of particular interest, various physicians are asked to discuss and criticize, or commend, the management. The same procedure applies to the deaths after operation in category 2. In this manner, all deaths are at least presented before the staff. Furthermore, the method is a useful one by which the community hospital may carry out, in part, the requirement of the Joint Commission on Accreditation that a thorough review and analysis of clinical work done in the hospital—on at least a monthly basis—be reported in writing.

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GOVERNMENT SERVICES

AIR FORCE

Five Year Training Program.—The nine carefully selected regular Air Force medical officers who completed the advanced course at the School of Aviation Medicine, Randolph Field, Texas, Aug 19, have embarked on a training program that covers five years and will qualify them as specialists in aviation medicine. The nine graduates had previously completed the primary course for squadron surgeons given at the school. The year of study just completed is the first of two years, the second of which will be taken at a civilian medical school. Two men are going to Johns Hopkins University and the other seven to Harvard. After finishing the two years of academic training and a two year residency at Air Force medical installations the officers will be eligible to take the board examinations in aviation medicine. In the group of officers taking this special training, which will be given to one class of about the same size each year, the Air Force expects to find its future leaders in research, education, and administration. The nine graduates were Majors George R. Anderson, David H. Beyer, Richard M. Fenno, John P. McCann, Robert K. Quinell, and Raymond A. Yerg, and Captains Henry C. Moritz Jr., Walter H. Smartt, and Charles W. Westerbeck.

NAVY

Personal.—Vice-Admiral Clarence J. Brown, M.C., retired, has been appointed medical consultant to the department of the Youth Authority, state of California, with headquarters in Sacramento. Until his retirement on May 1, Admiral Brown served as Deputy Surgeon General of the Navy.

PUBLIC HEALTH SERVICE

Grants for Medical Research.—The Surgeon General has approved federal grants totaling \$14,685,671 for 1,442 medical research projects in the major diseases afflicting Americans. The grants were approved during recent meetings of the seven national advisory councils. Four hundred fifty-nine of the awards, totaling \$4,568,073, were for new research projects, and 983, totaling \$10,117,598, were for continuation of existing projects. The awards were made to scientists in 335 research institutions in the United States and are administered by the National Institutes of Health research bureau of the Public Health Service. These amounts represent about 60% of the fiscal year 1955 funds appropriated by Congress for medical research projects (\$33,918,000) supported in whole or in part by Public Health Service grants. The grants award program covers support of research in the medical and biological sciences, particularly research in the causes and treatment of heart disease, cancer, mental illness, arthritis and other metabolic diseases, the neurosensory and neuromuscular diseases (glaucoma, retrolental fibroplasia, multiple sclerosis, cerebral palsy, and epilepsy) diseases of the teeth and oral cavity and certain diseases of microbiological origin, such as influenza, infectious hepatitis, the common cold, and malaria. Other projects supported by PHS research grants are concerned with fundamental exploration of metabolic and biological phenomena underlying the causes of most of the noninfectious diseases.

The Public Health Service is assisted in its evaluation of research grant applications from medical scientists by two types of advisory and consultative bodies. The first of these, called "study sections," consists of 17 panels of more than 200 leading technical experts representing many branches of modern medical science. The second group consists of the seven national advisory councils established by Congress and composed of leaders in the medical sciences in education and in public affairs.

Before applications for research grants can be approved by the Surgeon General, they must first be approved by an advisory council. Each of the councils reviews the actions recommended by the study sections, supports or changes the recommendations, and sends the applications to the Surgeon General.

Institute of Arthritis and Metabolic Diseases.—Dr. DeWitt Stetten Jr. has been appointed associate director in charge of research of the National Institute of Arthritis and Metabolic Diseases, Bethesda, Md. The appointment was announced by Dr. Floyd S. Daft, director of the institute. Dr. Stetten will direct the institute's integrated program of fundamental research and clinical investigation into problems related to the several forms of arthritis and such metabolic diseases as diabetes, vitamin deficiencies, gout, obesity, and disorders of the blood, bones and liver. He was, for several years, chief, division of nutrition and physiology, Public Health Research Institute of the City of New York, Inc. He has served also as assistant professor of biological chemistry at Harvard medical school, Boston and assistant professor of biochemistry, College of Physicians and Surgeons, Columbia University, N.Y. He is a member of the editorial boards of four medical journals, the *American Journal of Medicine*, *Metabolism*, *Journal of Chronic Diseases*, and the *Journal of Biological Chemistry*. He received his undergraduate degree from Harvard College, and his M.D. and Ph.D. from Columbia University.

Medical Aid for Flood-Stricken Pakistan.—President Eisenhower dispatched by air last week end an 86-man emergency medical force to assist flood-stricken East Pakistan. Dr. Alexander D. Langmuir, who heads the force, took with him a half dozen of the Public Health Service's experts in fighting large-scale epidemics. Dr. Langmuir is the chief epidemiologist of the Public Health Service's Communicable Disease Center in Atlanta, Ga. Reports from Pakistan to the Foreign Operations Administration indicate that 7 million persons have been left homeless or seriously affected by the unprecedented floods that have followed the monsoons. Chief concern of the Pakistan government is the threat of major epidemics of typhoid fever, dysentery, cholera, and malaria. The Army has already dispatched to Pakistan 40 two-man teams of medical corpsmen to work with the PHS group.

Predoorate Research Fellowships.—The Surgeon General announces a predoctorate research fellowship program at the National Institutes of Health in Bethesda, Md. These research fellowships in health medical sciences, and related fields are available to successful candidates with bachelor's or master's degrees or equivalent training. Basic stipends are first year, \$1,400, intermediate year, \$1,600, terminal year, \$1,800. In addition to the basic stipend, \$350 allowance is made for spouse and each dependent child. Basic tuition and certain travel allowances are paid. Application may be made at any time. Information may be obtained from Research Fellowships Branch, Division of Research Grants, National Institutes of Health, Bethesda 14, Md.

VETERANS ADMINISTRATION

Personal.—The following two appointments to the staff of the Department of Medicine and Surgery, Washington D.C. have been announced. Dr. Linus A. Zink, formerly director of hospitals and clinics, has been promoted to deputy director for operations. Dr. Irvin J. Cohen, formerly manager of the VA hospital at Baltimore, has been appointed to the central office post of deputy director for hospitals.

The Veteran Population.—The Veterans Administration reports that as of June 30, 1954, the total number of veterans in civil life was 20,850,000 and of these 15,425,000 were World War II veterans, 3,236,000 World War I veterans and 2,189,000 veterans of other wars and the regular establishment. The last figure includes veterans with service only since the start of the Korean campaign and former regular establishment members of VA compensation rolls. On June 30 the total daily patient load in VA and non-VA hospitals was 109,640 of which number 4,790 patients were in non-VA hospitals. The total number of site acquisitions for new hospitals, as of June 30, 1954, was 66 and the total number of new hospitals completed was 60 while 6 new hospitals were still under construction. In the hospital addition and conversion program 52 additions and conversions had been completed, 4 were in progress and 2 other construction contracts had been awarded.

COMMITTEE ON MENTAL HEALTH

The following "Resolution on Relations of Medicine and Psychology" was developed jointly by special committees of the American Psychiatric Association, the American Psychoanalytic Association and the Committee on Mental Health for the purpose of presenting a united front concerning the fact that psychotherapy is a special form of medical treatment that should be selected for use according to medical criteria, and that "psychotherapy" does not form the basis for a separate profession.

This resolution has been submitted to and approved for publication by the board of trustees of the American Medical Association, the council of the American Psychiatric Association, and the executive council of the American Psychoanalytic Association.

R. J. PLUMMETT, M.D., Secretary

RESOLUTION ON RELATIONS OF MEDICINE AND PSYCHOLOGY

For centuries the Western world has placed on the medical profession responsibility for the diagnosis and treatment of illness. Medical practice acts have been designed to protect the public from unqualified practitioners and to define the special responsibilities assumed by those who practice the healing art, for much harm may be done by unqualified persons, however good their intentions may be. To do justice to the patient requires the capacity to make a diagnosis and to prescribe appropriate treatment. Diagnosis often requires the ability to compare and contrast various diseases and disorders that have similar symptoms but different causes. Diagnosis is a continuing process, for the character of the illness changes with its treatment or with the passage of time, and that treatment which is appropriate may change accordingly.

Recognized medical training today involves, as a minimum, graduation from an approved medical school and internship in a hospital. Most physicians today receive additional medical training, and specialization requires still further training.

Psychiatry is the medical specialty concerned with illness that has chiefly mental symptoms. The psychiatrist is also concerned with mental causes of physical illness, for we have come to recognize that physical symptoms may have mental causes just as mental symptoms may have physical causes. The psychiatrist, with or without consultation with other physicians, must select from the many different methods of treatment at his disposal those methods that he considers appropriate to the particular patient. His treatment may be medicinal or surgical, physical (as electroshock) or psychological. The systematic application of the methods of psychological medicine to the treatment of illness, particularly as these methods involve gaining an understanding of the emotional state of the patient and aiding him to understand himself, is called psychotherapy. This special form of medical treatment may be highly developed, but it remains simply one of the possible methods of treatment to be selected for use according to medical criteria for use when it is indicated. Psychotherapy is a form of medical treatment and does not form the basis for a separate profession.

Other professional groups such as psychologists, teachers, ministers, lawyers, social workers, and vocational counselors, of course, use psychological understanding in carrying out their professional functions. Members of these professional groups are not thereby practicing medicine. The application of psychological methods to the treatment of illness is a medical function. Any physician may utilize the skills of others in his professional work, but he remains responsible, legally and morally, for the diagnosis and for the treatment of his patient.

The medical profession fully endorses the appropriate utilization of the skills of psychologists, social workers, and other professional personnel in contributing roles in settings directly

supervised by physicians. It further recognizes that these professions are entirely independent and autonomous when medical questions are not involved, but when members of these professions contribute to the diagnosis and treatment of illness, their professional contributions must be coordinated under medical responsibility.

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President
American Medical Association
ARTHUR P. NOYES, M.D.
President
American Psychiatric Association
IVES HENDRICK, M.D.
President
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MEDICAL FILM REVIEWS

Fractures of the Humerus 16 mm color sound showing time 25 minutes. Produced in 1953 by Churchill-Wexler Productions, Los Angeles, for and procurable on loan from Presentation Division the Veterans Administration, Vermont and H St., N.W., Washington 25 D.C.

The anatomy of the bones and muscles with their pulls that cause displacements is demonstrated. In each fracture the dangers of ill-advised manipulations are shown. Methods of reduction and maintenance of position are demonstrated, and the reasons for various manipulations are brought into bold relief. This film is highly recommended for medical students, interns, and residents. It will also serve as an excellent review for orthopedic surgeons. The photography and animation are exceptionally well done.

Operative Procedure for Total Urinary Incontinence (PMF 5202) 16 mm color sound showing time 20 minutes. Produced in 1952 by the Department of the Army. Procurable on loan from Surgeon of the Army area in which the requestor resides.

This is a case-report type of film depicting on the cadaver the operative technique of using fascial transplants of the external oblique muscle that are swung down through tunnels under the symphysis and the membranous urethra. The technique demonstrated had been used on one patient in whom total urinary incontinence developed due to injury of the external sphincter during transurethral prostatic resection. The film concludes with a few postoperative sequences of the actual patient during the act of voiding. No justification was given for doing this elaborate procedure rather than simpler techniques used in the past. The surgical technique as shown was essentially correct. The photography is well done. This film will be of interest chiefly to urologists.

Functional Digestive Disease—Functional disturbances of the digestive tract may be classified into 1) those caused entirely by a psychic factor such as emotional trauma or excessive nervous tension, they are transitory, easily identified and cured by relief of the instigating factor, 2) those having a psychic background, but which are no longer transitory but sustained in a groove of poor digestive function with habitual incoordination, and 3) those in which disturbance in coordination is caused by direct interference, through the use of food difficult of digestion, and excesses in smoking, alcohol and the use of laxatives. In the second and third groups the etiologic factors may be intermingled, to the extent that sustained central nervous disturbances may result in interference on the part of the patient by means of laxatives or roughage in food and, conversely, habitual interference may result in nervous disturbances. Only in the first group with its transient manifestations of digestive dysfunction is the term psychosomatic exclusively applicable, and in these cases treatment for nervous disturbances alone is effective.—Sara M. Jordan, M.D., Functional Digestive Disease in the Aged, *The Journal of the American Geriatrics Society*, November, 1953.

THE LEISURE CORNER

FOR THE LOVE OF CHESS

Not too long ago as history goes, Dr Sigmund Tarrasch, a German physician who had nearly attained the status of world champion chess player earlier in the century, summarized the satisfaction that is obtained from playing chess in a few, expressive words 'I have always had a slight feeling of pity,' he declared in an essay on chess, 'for the man who has no knowledge of chess, just as I would pity the man who remained ignorant of love. Chess, like love, like music, has the power to make man happy.' That this experience is widely shared has been confirmed by the experiences of countless chess devotees over a period of some 1,500 years.

Although the precise origin of chess is submerged in a haze of obscurity, chess, as far as is known, dates back to India in the fifth century A D. During the Middle Ages the game was introduced in Europe, where it soon became the most fashionable pastime of the leisured classes. (As a parenthetical reminder of the days when chess was regarded as both the sport of kings and the king of sports, it is interesting to note that chess is the only game permitted in the British House of Parliament.) Came the democratization of life, and the popularity of chess grew by leaps and bounds. By the middle of the 19th century chess centers were established in every large city of Europe, the British Isles, and the United States, and numerous magazine and newspaper columns devoted exclusively to chess attracted thousands of ardent readers. Today, chess is an integral part of our culture, distinguished by an endless stream of tournaments, club affairs, and literature dealing with every aspect of the game.

As a mere pastime chess is learned quickly, even though some persons regard it as weighted with sedation and far too difficult for anyone to master but mathematicians, statisticians, actuarial experts, and the like. Actually, a modest amount of study will enable many chess-disposed physicians to become pretty fair players. Like most games of skill, mastery of chess does take time and study, however, the beginner can extract considerable pleasure right from the start, and the pleasure thus derived is almost certain to multiply as the chess player's game improves. One obstacle to the spread of interest in chess has been its alleged difficulty. Even though chess is not as simple as tick-tack-toe, anyone can learn to play chess in half an hour. Naturally, there is more to chess than knowing how to move the pieces, however, the very complexity of the game is the source of its fascination. Indeed, one of the peculiar attractions of chess is that if two beginners are equally matched it is almost certain that they will feel the same interest in the game as though they were thoroughly versed in its intricacies.

Excellence in chess is attained only by persistent concentration on the game. A truly proficient player must not only learn the subtle variations in which the game abounds but also be able to apply his knowledge, resources, and powers of analysis in attack and defense. On the surface, chess provides a pleasant and refreshing diversion, but to some chess players the intensely competitive aspects of the game arouse deep-seated instincts. Dr Emanuel Lasker, a mathematician who ruled the world of chess as a champion for many years, maintained that the spirit of combat during chess play was in itself rewarding and that two chess players competing over a board could aptly be compared to two generals on a battlefield, the strategy and tactics of chess being similar in spirit to actual warfare.

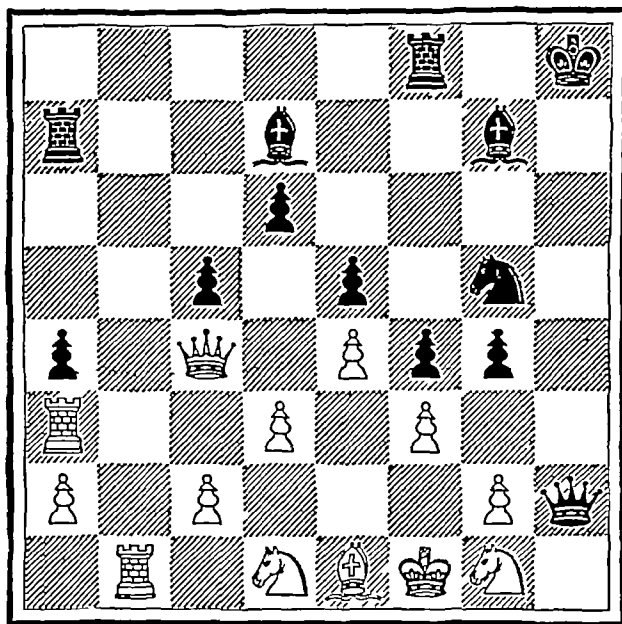
The argot of chess typifies the international flavor that has invaded languages the world over. The name of the game is derived from the Persian phrase 'Shah mat,' or 'the king is dead.' From the German stem such recognizable terms as "blitz" (lightning chess), "sitzfleisch" (the ability to patiently wait out an opponent) and "zugzwang" (forced move). From France come 'en passant' (an uncommon form of capture of a pawn), 'en pris' (attacked) and 'jadoube' (I adjust—relieving the player of the necessity of moving a piece that has been touched). Italian contributions include the words "fianchetto" (from the side), 'gambit' (sacrifice, usually of a pawn) and 'tempo' (time

element). Yiddish has contributed the comical term "potzer," which means a clumsy or careless player.

The general type of chess pieces in use today was designed about a century ago in England. The names attached to chess pieces reflect the age of chivalry at the time of the Crusades, with the king, queen, bishop, knight, castle, and pawn characterizing the structure of medieval society. Chess is as rich in eponyms as is medicine. Openings in the game, traps, defenses, gambits, and positions have been named after famous chess masters, cities, and countries—for example, the Dutch opening, the Danish gambit, the Steinitz defense, and the Ruy Lopez opening.

Of the estimated eight million chess players in the United States alone, most devotees play chess across the board or by correspondence or else solve chess problems, which are artificial positions on the chess board permitting mate in a specified number of moves, with play involving elements of strategy or beauty. By chess players who are shut-ins or who live at great distances from each other, correspondence chess is played one or more moves at a time via the postal route. Thousands of correspondence players in the United States are grouped into cor-

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respondence clubs publishing their own magazines, conducting their own tournaments, and crowning their own champions. While it is not generally known, chess has also been played by cable, telegraph, radio, telephone, and semaphore.

Chess is an ideal form of recreation for physicians because while the game is played it is impossible to be concerned with the trials of medical practice, the national business picture or the pros and cons of the international situation. Whether he likes it or not, the chess player must divorce himself from thoughts of everything else in order to concentrate on the chess pieces and the board. As with most hobbies chess serves as a method for making new friends. Physicians who travel often find the game to be a strong bond linking them to other medical colleagues. Even when language serves as a barrier, communication between two persons can be established effectively over a chess board.

Finally a brief comment about the disadvantages of a fascinating hobby, for one, conversation languishes during a chess game and for another, chess has so strong an attraction for some players that the compulsion to play the game almost amounts to addiction. Chess can become a time-consuming obsession it is true but so can any other game if it is taken too seriously. For most physicians who take the game in a light-hearted spirit and who have learned to play for the sheer fun of it chess is a never failing source of intelligent amusement.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Sickle Cell Disease. An Analysis of Recent Advances J E Moseley and J B Manly *J Nat M A* 46 177-181 (May) 1954 [New York]

Although previously the frequency of the sickling phenomenon had been estimated to be approximately 7% in the American Negro, improvements in techniques have shown that the frequency is between 9 and 10%. It is further estimated that hemolytic anemia develops in 1 to 2% of those who have the sickling trait. After commenting on the abnormalities of the hemoglobin molecule in the sickling phenomenon and on the inheritance of sickling the authors deplore the fact that, despite the frequency of sickle cell disease among the American Negro population, cases are frequently overlooked or incorrectly diagnosed. Many patients with abdominal crises of sickle cell anemia or with cholelithiasis due to pigment calculi resulting from increased blood destruction have been operated on without suspicion of the underlying cause. Patients with the sickle cell trait who have bone and joint pain due to thrombosis and infarction are often treated for years for arthritis. The authors recently observed two patients with gross hematuria in whom intravenous pyelography and cystoscopy were negative. Both had sickle cell anemia. The diagnosis in one was suggested by bone lesions in a part of the skeleton that was included in the pyelographic x-ray studies. The urologic literature had several reports of such cases. Many cases diagnosed as "idiopathic" or "essential hematuria" are attributable to sickle cell disease. Because sickle cell disease is essentially a disturbed blood physiology, its clinical manifestations are diverse, it rivals syphilis as an imitator of other diseases. Skeletal changes result from hyperplasia of the erythroblastic elements of the bone marrow and from intraosseous vascular thromboses. The medullary spaces of the long bones are widened and the cortices become thin and the trabecular pattern irregular. In the flat bones there may be exaggeration of the trabecular markings and the vertebrae may become demineralized and cupped. In the skull, there may be widening of the diploic space between the inner and outer tables with thinning of the outer table. The changes are usually most marked in the parietal region. Several distinct hematological disorders may develop in persons with the sickling trait, and so it is no longer sufficient simply to speak of sickle cell anemia without attempting to establish the genetic factors or the forms of hemoglobin responsible for the disease.

Death from Cat Scratch Disease. S Graff *Monatsschr Kinderh* 102 232-237 (April) 1954 (In German) [Berlin, Germany]

Graff reviews the present status of knowledge on cat scratch disease, pointing out that it is a lymphadenitis, which, depending on the site of invasion of the causal factor, presumably a virus, may become manifest as a cutaneoglandular, a tonsilloglandular, or an oculoglandular type. According to Mollaret, the diagnosis can be verified with the aid of a complement fixation test some weeks after the appearance of the glandular process. Although it has been generally accepted that the

disease runs a favorable course, terminating in spontaneous cure, Graff reports the case of a 30-month-old boy who died after an attack of cat scratch disease. Cat scratch disease was thought of on the basis of the clinical aspects and the results of postmortem examination. Inquiry revealed that the child had played with a cat (kissing, etc.) and that the cat had been sick with diarrhea and vomiting. The boy had the tonsilloglandular type of the disease, which within about 10 days led to a generalized toxic infection. Histological studies revealed the typical reaction of cat scratch disease particularly in the lymphatic tissues of Waldeyer's tonsillar ring and the regional lymph nodes. The author lists factors indicative of infection by the cat, but objects to the term cat scratch disease, pointing out that scratching by the cat is not necessary and that other forms of contact may transfer the disease. He suggests the term *felinosis* as preferable to cat scratch disease.

Atabrine in Treatment of Tapeworm. K. M. Paackelmann. *Deutsches med J* 5 244-245 (May 15) 1954 (In German) [Berlin, Germany]

Paackelmann says that the efficacy of quinacrine (Atabrine) against tapeworm was discovered in 1944 in South America in the course of a prophylactic campaign against malaria. He reviews the literature and reports his own observations on the use of quinacrine in tapeworm. Some reports were rather indefinite as to the number of patients treated, but emphasized the efficacy and good tolerance for this drug. In 347 of 488 patients with *Taenia saginata* or *Taenia solium*, who were treated with quinacrine, the tapeworm with head was expelled, and, in an additional 46 patients, a tapeworm was expelled, but the head could not be found. The administration of quinacrine in the treatment of tapeworm was as follows: The evening before the patient generally abstained from eating. On the next morning, while still fasting, he was given 0.8 to 1 gm of quinacrine. Two hours later, 20 to 30 gm of a saline cathartic was given, and the tapeworm was expelled within two to four hours. Occasionally quinacrine may cause vomiting, and this may interfere with the success of the treatment. Quinacrine can be administered by the duodenal tube. This mode of administration increases the chances of success. The author feels that quinacrine approaches the requirements of an ideal anthelmintic more nearly than do preparations customarily used. The administration of quinacrine in 1 gm doses is not likely to cause toxic manifestations, if contraindications to its use are absent. The anthelmintic dose can be repeated after several days if this should prove necessary. Success may be expected in from 80 to 90% of cases.

Intractable Angina Pectoris. Treatment with Fractional Doses of Radioactive Iodine. J B Wolffe, A D Dale and E I Siegal. *J Am Geri Soc* 2 288-292 (May) 1954 [Baltimore].

Wolffe and associates feel that the irreversibility and risk associated with thyroidectomy in patients with angina have made this approach too drastic. Thiouracil and other anti-thyroid drugs carry with them the danger of agranulocytosis. The advent of radioactive iodine (I^{131}) has made available a new, effective and easily controlled therapeutic agent. This report is based on observations on 32 patients who were treated with radioactive iodine. Twenty-four were euthyroid, five were hypothyroid, and three were hyperthyroid. Four of the 32 patients with intractable angina experienced complete remission of symptoms with one dose of I^{131} (average, 10 mc). Ten patients had some relief after one dose of I^{131} and complete remission of symptoms after a second dose. The average total dose was 22 mc. These 14 patients showed signs of depressed thyroid activity, in fact, the degrees of relief from anginal seizures in many instances seemed to be in direct proportion to the decrease in thyroid activity obtained with the use of I^{131} . Twelve patients experienced some relief of symp-

The place of publication of the periodicals appears in brackets preceding each abstract.

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toms following two courses of I^{131} but showed minimal evidence of depressed thyroid activity. The two doses averaged 16 mc. A third dose has been administered to this group but reevaluation has not yet taken place. Six patients had no alleviation of symptoms following two courses of therapy with an average total dose of 18 mc. The authors feel that a combination of prevailing forms of therapy with I^{131} is more effective than either type of treatment alone. The underlying cause or causes of the anginal attacks should be treated.

The Heart and Gall Bladder Disease. J R Beckwith, A G Hampton, D T Kernodle and others. *Virginia M Month* 81 211-214 (May) 1954 [Richmond, Va.]

Beckwith and associates emphasize the apparent close association between coronary disease and cholecystitis and review the evidence that impulses occurring in the biliary tract and other abdominal viscera may act as trigger mechanisms in the production of various cardiac arrhythmias and angina pectoris. The differential diagnosis between the two conditions is often difficult because of the fact that the pain impulses may be transmitted to the same or overlapping areas in the spinal cord. They present histories of several patients in whom cardiac abnormalities subsided after cholecystectomy. They describe a case of gallbladder disease resembling angina pectoris and one of myocardial infarction resembling gallbladder disease. A review of the records of 107 men and 100 women who had undergone cholecystectomy revealed that, of the men, 10 died postoperatively. None of the women died. There were 38 men with heart disease, of whom 3 died as a result of this, and three died as a result of noncardiac conditions. It appears that a patient with coronary disease, particularly a man, incurs a mortality risk of between 5% and 10% when undergoing cholecystectomy. It is difficult to determine in a given patient what effect a diseased gall bladder has on the heart, but, in many patients with symptoms of cholecystitis associated with those of coronary disease or of arrhythmia, the risk of cholecystectomy is justified because of the likelihood that the gallbladder is a trigger mechanism that potentiates the symptoms of coronary disease or of arrhythmia.

Endomyocardial Fibrosis. J D Ball, A W Williams and J N P Davies. *Lancet* 1 1049 1054 (May 22) 1954 [London, England]

The authors, who work in Uganda, Africa, suggest that endomyocardial fibrosis is the cause of much of the heart disease of obscure cause seen there. They analyze a series of 20 patients whose disease was proved at necropsy. In this condition large areas of firm white fibrous tissue are seen on the endocardial surface of the ventricles, commonly involving the structures of the auriculoventricular valves, particularly the posterior mitral cusp and chordae, with resulting mitral insufficiency. In some cases an obliterative effect is produced, reducing the capacity of the right ventricle. Parietal thrombus is common. In Africa persons suffering from endomyocardial fibrosis are generally of the lowest economic level. Of this series of 20 patients, 5 died within a few days of admission to the hospital, but most patients lingered for weeks or months in a waterlogged condition unhelped by treatment. In some cases, intercurrent infection contributed to death. The authors' longest period of observation was 20 months; this patient had a history of recurrent attacks of edema for two or three years previously. Another patient had had symptoms for seven years. These were the longest histories among the 20 and both patients had endomyocardial fibrosis of the obliterative type with gross fibrosis that appeared to be of long standing. Evidently some patients can survive the initial injury for many years, fibrosis proceeding to a point at which cardiac disability becomes stationary or only very slowly progressive, as in rheumatic heart disease. A few patients have been seen at necropsy with localized patches of superficial endomyocardial fibrosis at the apex of one of the ventricles. In them the cause of death was not attributable to this lesion and there was no reason, from the clinical evidence available to suspect any impairment of cardiac function during life. The response to treatment of heart failure by bed rest with digitalis, mercurial

diuretics, and aspiration of fluid was disappointing. Nothing is known about the earlier stages of this disease, and its cause is also unknown.

Eosinophilic Granuloma of the Lung. W F Mazzitello. *New England J Med* 250 804-809 (May 13) 1954 [Boston]

Eosinophilic granuloma of the lung without associated skeletal or visceral lesions was first described by Farinacci and others in 1951. They observed these lesions in two enlisted men, both of whom had chronic cough, weight loss, exertional dyspnea, and chest discomfort. The diagnosis was made by thoracotomy and lung biopsy. The histological appearance of the excised nodules had features identical with that of eosinophilic granuloma of bone. Mazzitello presents two similar cases that likewise were verified by thoracotomy and lung biopsy. The similarity of these pulmonary lesions to the isolated skeletal lesions of eosinophilic granuloma is pointed out, and a similar chronic benign clinical course is expected. Mazzitello mentions the studies of various investigators particularly a recent review by Lichtenstein, in which the confusion in terminology is deplored, and the new term "histiocytosis X" is suggested as an all inclusive name, with eosinophilic granuloma as a localized form, and Letterer-Siwe's disease and Hand-Schüller-Christian's disease (lipid histiocytosis of the cholesterol type) as disseminated forms. The term "histiocytosis X" refers to the essential type of histological cellular reaction occurring in these diseases, and "X" indicates the need for the identification of an etiological agent. The treatment of the pulmonary lesions is still undecided. Many more cases will have to be evaluated to determine accurately the effectiveness of corticotropin, cortisone, and x-ray therapy.

Bronchial Carcinoma—A Pandemic. J Clemmesen. *Danish M Bull* 1 37-46 (April) 1954 (In English) [Copenhagen, Denmark]

Clemmesen feels that the greater part of the increase in frequency of cancer of the lung, which became evident during the first years of this century, may well have been apparent only and caused by the prolongation of the average length of life together with progress in diagnostic technique, but it should be realized that the latter cannot change the sex ratio for cancer of the lung. From autopsy records in Denmark it appears that the increase in bronchial carcinoma cannot have begun before 1926 and the rise is doubtful up to 1930. The author raises the question as to whether air pollution plays a part in the increase in bronchial cancer. The incidence of lung cancer in districts free of air pollution does not indicate that this cancer will be reduced by complete abatement of air pollution. Inquiries have revealed a higher number of heavy smokers among patients with bronchial carcinoma than among control persons. However, since there are nonsmokers with bronchial carcinoma, and a large number of smokers without the disease, the figures often fail to convince lay readers. The author feels that from reported studies it seems impossible to escape the conclusion that a mortal disease, which demands decades for its development, and probably as lengthy efforts for its prevention, is now increasing on a pandemic scale because of widespread addiction to smoking.

Use of Hexamethonium in Arterial Hypertension. D A Rytand. *California Med* 80 375-376 (May) 1954 [San Francisco]

According to Rytand, hexamethonium properly given reduces blood pressure appreciably in most hypertensive patients. With the patient under careful observation in a hospital the first two doses of the drug several hours apart should not exceed 5 mg each in order to avoid syncope or more severe depressor reactions. Since tolerance appears promptly, the dose must be increased during the next few days or even weeks according to the patient's response. This requires careful observation and many determinations of arterial pressure levels especially in the hour or two immediately following an injection. The use of the drug is associated with prominent and unpleasant side-effects: fall of pressure sometimes precipitates acute myocardial infarction, hemiplegia, uremia, or even death. Hexamethonium

is, therefore, suitable for relatively few hypertensive patients (rather young ones with severe or malignant syndromes) and often fails in those with renal insufficiency who most need help. Of 24 hypertensive patients so treated, 12 died of the disease, and, of the other 12, only 2 cared to go on with the injections after one year, symptoms were too unpleasant and results too unimpressive for the others. The degree of care required to obtain satisfactory effectiveness is such that the program of treatment becomes too unwieldy for general use.

Acute Pancreatitis, Clinical Study of One Hundred Cases W F Becker J Louisiana M Soc 106 166-170 (May) 1954 [New Orleans]

One hundred consecutive cases of acute pancreatitis observed between 1943 and 1952 at the Charity Hospital in New Orleans are reviewed. Only those patients are included, in whom laparotomy or autopsy demonstrated acute pancreatitis or who presented a consistent clinical picture in conjunction with an increase in serum amylase. The number included 84 cases of acute edematous pancreatitis and 16 cases of acute pancreatic necrosis. Alcoholism has been described as a predisposing factor in acute pancreatitis. Twenty-two per cent of the patients in this series were chronic alcoholics, and in 13% the onset of acute abdominal pain was known to have followed ingestion of alcohol. Four patients had acute pancreatitis within three months after termination of pregnancy, and in each instance there had been similar but less severe attacks during pregnancy. The sudden onset of severe abdominal pain was the initial symptom in over 90% of the cases. In 13 cases it appeared shortly after the ingestion of a heavy meal. The pain was usually severe and steady and first involved the upper abdomen. Nausea was experienced by 90% of the patients, and vomiting occurred in 82%. A firm, fixed, tender abdominal mass was present in 11 cases. The mass was in every instance a pseudocyst or abscess and occurred only in the patients with acute pancreatic necrosis. The mortality of the series was 12%, of the 84 patients with acute edematous pancreatitis 3 died, of the 16 with acute pancreatic necrosis 9 died. One-third of the patients were subjected to early operation, in most instances because of errors in diagnosis. This poor diagnostic showing can in part be ascribed to the fact that during the early years of this study facilities for the performance of the serum amylase test were not available in this institution at night. A preoperative determination of the serum amylase was performed in only 18 of the 34 patients subjected to operation. Conservative treatment is best in most cases of acute pancreatitis. Early operation should perhaps be restricted to those instances in which the diagnosis cannot be established with reasonable certainty or when there exist signs of biliary tract obstruction, suppuration or cystic accumulations. Acute pancreatitis is now being recognized with increasing frequency largely because of a keener awareness of the condition and the more frequent use of the serum amylase test. At the Charity Hospital in New Orleans acute pancreatitis seems to be about one-tenth as common as acute mechanical intestinal obstruction and about one-fiftieth as common as acute appendicitis.

Salicylates and the Plasma Level of Adrenal Steroids R I S Bayliss and A W Steinbeck Lancet 1 1010-1011 (May 15) 1954 [London, England]

The possibility that salicylates act as antirheumatic agents by increasing the secretion of adrenocortical steroids either by stimulating the endogenous production of corticotropin or by directly stimulating the adrenal glands was investigated by measuring the plasma level of circulating adrenocortical steroids before and after salicylate therapy, since an increase in the secretion of the steroids by either of the mechanisms suggested would presumably lead to an increase in their plasma level. Acetylsalicylic acid was given to seven patients with either acute rheumatic fever or moderately severe rheumatoid arthritis at intervals of four hours in dosages ranging from 0.75 to 1.75 gm, and to four other patients in a single large dose of from 3.3 to 5.3 gm in water. No significant increase in the level of the circulating adrenocortical steroids could be detected in either

group of patients, although high plasma salicylate levels were obtained in three patients and were accompanied by salicylism severe enough to require reduction of the dosage in one. These findings indicate that the pituitary-adrenal system is not stimulated by salicylates given in clinical dosage.

Rheumatoid Arthritis. An Evaluation of Long-Term Treatment with Cortisone E P Engleman, M A Krupp, W W Saunders and others California Med 80 369-374 (May) 1954 [San Francisco]

Engleman and co-workers report on 36 men and 20 women with rheumatoid arthritis treated continuously with cortisone for periods ranging between 4 and 38 months. Fifteen patients received daily doses of 15 to 50 mg of cortisone, 28 received 51 to 75 mg, and 13 received 76 to 100 mg. Concomitant therapy included periods of rest, physical therapy, and salicylates in daily doses of 2.4 to 3.6 gm. The incidence of subjective improvement exceeded that of objective improvement. Forty-nine patients (87.5%) had at least some decrease in pain and stiffness and significant increase in agility and joint mobility. The resulting functional improvement was usually sustained as long as cortisone was continued. Functional improvement was often observed despite obvious progression and increasing severity of the disease process as revealed by roentgenograms. Twenty-one of the 49 patients who were improved subjectively and functionally were classified on the basis of objective evidence as unimproved or worse. The incidence of objective improvement was higher in women, also, in those patients whose disease was in an early stage and of short duration at the time therapy was begun, and who required relatively smaller maintenance doses of cortisone. Therapeutic results were not affected by the age of the patient or by the presence of spondylitis. Despite precautions, the long-term administration of cortisone was, in some patients, productive of serious undesirable side-effects. Moonface was seen at some time during the administration of cortisone in all but four patients. Hypertension was observed in 13 patients, in 3 of whom it was uncontrolled despite reduction to the minimal effective dose of cortisone. Cerebrovascular accidents resulting in death occurred in two patients. The role of cortisone in those vascular accidents is moot. Duodenal ulcer occurred in two patients. Pathological fractures of vertebrae occurred in two women aged 77 and 52, both of whom had severe osteoporosis before the administration of cortisone. Final opinion regarding the role of cortisone in the treatment of rheumatoid arthritis must await the elapse of more years. At present it is obvious that cortisone is not a substitute for conservative and well-established measures. Combined with them, it provided in many cases a degree of social and economic rehabilitation, which occurred even in the presence of advancing disease.

Fatal Influenza E L Walsh and F Levy West Virginia M J 50 125-127 (May) 1954 [Charleston, W Va]

The case of fatal influenza presented by Walsh and Levy was that of a man, aged 27, who was admitted to the hospital with the complaint of cough of two weeks' duration. Five days before admission he awoke with chills, fever, and generalized aches. He received 200,000 units of penicillin daily for three days before admission. His sputum became rust colored two days before admission. He continued to have chills and fever each day, and his cough remained unchanged. There was shortness of breath and a sense of fullness. Roentgen examination of the chest on admission showed pneumonia in the lower lobe of the right lung. The heart was somewhat enlarged. Four days later, roentgenograms showed the pneumonia clearing but a pneumonitis beginning in the upper lobe of the right lung. Ten days later, the pneumonic process had cleared completely. On the day before death, a roentgenogram of the chest showed patchy pneumonitis in the upper and lower lobes of the right lung. At various times during hospitalization the patient was given digitalis, oxytetracycline (Terramycin), penicillin, streptomycin, plasma, cortisone, and corticotropin, but to no avail. Microscopic studies of necropsy material revealed large hemorrhages into the pectoral muscles and the overlying subcutaneous fat. There

was petechial bleeding into the pleura, diaphragm, pericardium, stomach, liver, gallbladder, and small intestines. Besides common bronchopneumonic changes, emphasis is placed on "desquamated epithelium" and especially the peculiar hyaline deposits in the alveoli. The authors cite other reports on fatal influenza, particularly Wolbach's of 1919, which emphasized that "death from influenza means death from lung complications." The hyaline deposits were also mentioned by other investigators. Opie emphasized in 1928 that "this hyaline material may form a continuous layer resting on the wall of the alveolar ducts and extending across the orifices of the tributary alveoli."

Diabetic Neuropathy. Controlled Clinical Trials. C R Shuman and S F Gilpin. *Am J M Sc* 227 612-617 (June) 1954 [Philadelphia]

Three agents—vitamin B₁₂, pregnant mammalian liver extract, and adenosine triphosphate with thiamine or pantothenic acid—were given a therapeutic trial in patients with diabetic neuropathies that had not responded to careful regulation of diabetes with insulin and diet. In general, these were the severer neuropathies. Vitamin B₁₂ was administered to 12 patients, with failure to observe improvement in their neurological disorder. Pregnant mammalian liver extract was equally ineffective in 15 patients. Subjective improvement occurred in three patients of this group, but it was found that two of these were receiving a placebo that was being used as a control in this phase of the study. Adenosine triphosphate with thiamine produced subjective improvement in two of six patients so treated. No effect was noted in those receiving pantothenic acid. There was no alteration in the objective manifestations of neuropathy with the use of any of the agents employed.

Prevention of Insulin Hypoglycemia. J I Goodman. *Am. Pract & Digest Treat.* 5 464-467 (June) 1954 [Philadelphia]

The occurrence of hypoglycemic reactions has constituted a major problem in the management of diabetic patients. Since most reactions respond fairly promptly to glucose, administered orally or intravenously, there is a tendency to pass them off as harmless. However, when the brain tissue has been subjected to severe or prolonged hypoglycemia, widespread, bizarre, and often persistent clinical manifestations may be produced in spite of a normal or even an elevated blood sugar level. On the basis of case histories the author demonstrates that residual brain damage, transient hemiplegia and even death may result from insulin hypoglycemia. The protamine insulin group presents the greatest potential hazard insofar as hypoglycemia is concerned. This is true in the case of protamine zinc insulin, but especially so with mixtures of protamine zinc and regular insulin. The practice of insisting on the use of long-acting and intermediate insulins for every diabetic patient accounts for many reactions. In order to prevent hypoglycemia it is advisable to arrange the diet schedule to provide anticipatory feedings just before the time of maximum insulin action for each type of preparation, i.e., 2 hours after regular insulin, 6 to 7 hours after globin or isophane (NPH) and at bedtime (16 hours) in the case of protamine zinc insulin. Discussing the avoidance of insulin reactions during and after surgical treatment, Goodman says that he prescribes the identical dose of insulin that the patient has been taking right along. However, in patients who are unable to take food orally, 5 or 10% glucose solution is administered parenterally continuously until the patient is again able to resume normal eating. In the early stages of myocardial infarction there is a tendency to increase the dosage of insulin to compensate for the loss in carbohydrate tolerance. This practice may very well lead to hypoglycemia, sometimes with hazardous and even fatal results. Since the impaired sugar metabolism following a myocardial infarct is now believed to be part of the stress reaction, it is probably much safer to tolerate hyperglycemia and glycosuria for three or four days and leave the insulin dose as it is. Hypoglycemic reaction must be feared in patients with vascular disease because of the disastrous complications that may accompany circulatory collapse, aside from fresh myocardial infarcts.

Tung Nut Poisoning. E. Balthrop, W B Gallagher, T F McDonald and S Camariotes. *J Florida M A* 40 813-820 (May) 1954 [Jacksonville, Fla.]

The tung nut tree, *Aleurites fordii*, long has been grown in China as a source of tung oil. Its introduction into the United States and the rapid spread of its cultivation in the southeastern states has created a great new American industry. The mature tung nuts are crushed and their oil is expressed for use in the paint industry and allied fields. The whole ripe nut looks like a large walnut, and the unhulled seed is similar to a Brazil nut. The mature nut fresh from the tree has a sweetish taste like a chestnut, while the older, stored nut has a pleasant toasted almond flavor that is spoiled by the rancid after-taste that tung oil leaves in the mouth. Tung nuts are toxic. Cultivation of the tung tree for commercial and shade tree purposes is spreading. Because of these facts, especially the use of tung trees in urban areas where children have access to the nuts, tung nut poisoning is apt to become commoner. Tung nut poisoning is discussed and the literature reviewed. The primary toxic agent in tung nuts is a foreign protein, an albumin, causing gastrointestinal symptoms (nausea, vomiting, diarrhea) in mild cases, with shock and respiratory depression in severe cases. The treatment of tung nut poisoning is symptomatic, as it is for any food poisoning due to a foreign protein. The administration of magnesium sulfate by mouth seems to denature the protein. Whether this change is accomplished by its cathartic action, by osmotic dilution of the offending protein, or by salting out of the protein by the sulfate ion is not known. Concomitant with the use of magnesium sulfate, fluid and electrolyte replacement therapy is indicated especially for severely poisoned patients suffering from anaphylactoid reactions and potassium deficiency. Central nervous system stimulants and oxygen should also be used when indicated. In an extreme case corticotropin might be administered intravenously.

SURGERY

Indications for Surgical Treatment in the Anemic Forms of Diaphragmatic Hernia of the Stomach. P Santy, J Favre-Gilly and L. Laroyenne. *Lyon chir* 49 285-296 (April) 1954 (In French) [Paris, France]

The authors observed 16 cases of severe anemia produced by gastric hernia at the esophageal hiatus. Their experience has been that anemia occurs in about 25% of cases of diaphragmatic hernia. The syndrome is four times as common in women as in men. It appears in two different age groups—in young children and in adults between 50 and 60 years of age. Sometimes anemia follows hematemesis or melena, in other cases, the anemic symptoms are mixed with digestive symptoms, such as postprandial epigastric pain, or with pulmonary symptoms. The patients are often classed as having cardiac or coronary disease because of dyspnea or sternal constriction. Sometimes venous thrombosis is the presenting symptom, but often anemia is the only symptom and is classified as essential. Blood examinations usually show very hypochromic and microcytic but moderate anemia with a low mean corpuscular volume and corpuscular diameter. Chemical examination of the gastric juice is usually negative, but the chemical search for occult blood in the stools is usually positive (Weber reaction). Thus, this anemia appears to be posthemorrhagic. Radiological investigation is usually necessary to discover the hiatus hernia, either in simple radioscopic investigation or on series of gastric films and sometimes only in the Trendelenburg position. If the hernia is discovered first, as it was in one fourth of the authors' cases, the possibility of anemia must not be neglected. If the anemia is known first, as it was in three-fourths of the cases, the possibility of Biermer, macrocytic and refractory anemias must be eliminated. If microcytic and hypochromic anemia is found, a latent diaphragmatic hernia of the stomach should be suspected and radiological examination requested. Medical treatment consists of iron given orally or intravenously, but it only corrects the anemia and does not attack the cause. Surgery of the hernia is the only definitive treatment. Iron is used in the preoperative

period and anticoagulants in the postoperative period because of the high incidence of venous thrombosis and pulmonary embolism in this syndrome

Vagotomy in Patients with Duodenal Ulcer R Jelinek Wien klin Wchnschr 66 329-331 (May 14) 1954 (In German) [Vienna, Austria]

Of 136 patients who underwent vagotomy for nonbleeding duodenal ulcer between 1947 and 1951, one died of circulatory insufficiency caused by bronchopneumonia on the fourth postoperative day (an operative mortality rate of 0.73%). Of postoperative complications that occurred in only 14 patients, early vagus diarrhea in 7 patients was the most frequent. In 129 of the 136 patients, follow-up examinations were performed one to six years after the operation. Of the 129 patients, 77 had a vagotomy without gastrectomy, while 52 underwent combined vagotomy and gastrectomy. Of the 77 patients, 42 (54.5%) had no complaints whatsoever (highly satisfactory results), 17 (22.07%) had occasional general complaints that did not affect the subjective well being (satisfactory results), and 8 (10.38%) had complaints without roentgenologic evidence of ulcer (fair results). In 10 (12.90%) therapy failed. Of the 52 patients, 36 (69.23%) had highly satisfactory results, 10 (19.23%) satisfactory results, and 4 (7.69%) fair results. In two (3.8%) therapy failed. Thus results in patients who underwent combined vagotomy and gastrectomy were better than in those who submitted to vagotomy alone. Despite the relatively short follow-up of from one to a maximum of six years, the authors consider vagotomy combined with gastrectomy a valuable procedure in the treatment of duodenal ulcer.

Role of Surgery in the Therapy of Ulcerative Colitis J H Garlock and A S Lyons Gastroenterology 26 709-722 (May) 1954 [Baltimore]

Of 254 patients with ulcerative colitis treated by surgical measures between 1937 and 1952, 145 had universal colitis with involvement of the entire colon and rectum, 97 had right-sided colitis in which the rectum and often the sigmoid were free of disease, and 12 had left-sided colitis sparing the right and transverse portions of the colon. The authors' concept of rational approach to the surgical treatment of ulcerative colitis was based on four premises: 1. Treat the pathological complications of the disease, namely, pericolic abscess, fistula, hemorrhage, and perforation. 2. Save life in the occasional acutely toxic patient who does not respond to conservative therapy. 3. Remove the colon after study indicates that irreversible pathological changes have taken place. 4. The development of polyposis makes colectomy obligatory because of the high incidence of carcinomatous change. Under such circumstances, surgical treatment encompasses complete rehabilitation from chronic invalidism to a healthy and useful life. In order to obtain a clear-cut picture of the value of surgical therapy for ulcerative colitis, all deaths from all causes, late or early, during or after hospitalization were included in tabulating mortality statistics. The case mortality as opposed to the operative mortality was stressed in order to obtain the exact percentage probability of survival of the individual patient. Of the 145 patients operated on for universal colitis, 26 died of all causes (a case mortality of 17.9%), 244 operations, including 125 ileostomies, 5 combined ileostomies and colectomies, 87 colectomies, and 27 abdominoperineal resections, were performed on these 145 patients, 18 of whom died of the operation (an operative mortality of 7.3%). Of the 97 patients operated on for right-sided colitis, 16 died of all causes (a case mortality of 16.4%), 195 operations, including 90 anastomoses, 3 anastomoses and colectomies in one stage, 79 colectomies, and 23 secondary ileostomies, were performed on the 97 patients, 16 of whom died of the operation (an operative mortality rate of 8.2%). Of the 12 patients operated on for left-sided colitis, 3 died of all causes (a case mortality of 25%), 23 operations, including 11 transverse colectomies, 11 colectomies and abdominoperineal resections, and one combined proximal colectomy and ileostomy, were performed on the 12 patients, 3 of whom died of the operation (an operative mortality of 13%). Thus of the total (254 patients), 45 died of all causes, a case mor-

ality of 17.7%, 462 operations were performed on these 254 patients, 37 (7.9%) of whom died of the operation. Ulcerative colitis is probably the most difficult disease of the gastrointestinal tract to treat, but the authors hope that their report will help to bring some degree of rationalization to the two extremes of early radical surgical excision and denial of surgical intervention in any case.

Late Results in Treatment of 100 Cases of Acute Hematogenous Osteomyelitis J Trueta and J D Morgan Brit J Surg 41 449-457 (March) 1954 [Bristol, England]

Trueta and Morgan state that while at the onset of the penicillin era patients with acute hematogenous osteomyelitis were treated with penicillin only, Trueta and Agerholm in a report published in 1946 gave reasons for the reintroduction of early surgery in the treatment of acute hematogenous osteomyelitis, using it as a complement to penicillin. This change was made when it was found that penicillin alone could not prevent the infection from becoming chronic. This report analyzes the results of treatments by penicillin and surgery in 100 cases of acute hematogenous osteomyelitis. Cases have been followed up for from two to eight years. The following treatment was used. On admission the patient was carefully examined by an experienced surgeon, and an estimate of the site and intensity of bony tenderness was made. Blood was then removed for culture, determination of the sedimentation rate, and white blood cell count. The affected part was immobilized and, if possible, elevated. Penicillin treatment was begun with a dosage of 1,000,000 units per day, given either by continuous intramuscular drip or by repeated injections at three hour intervals. Twenty-four hours after admission, the same surgeon reexamined the patient, observing the amount of tenderness of the suspected area, the temperature as shown on the four hour chart, and the sedimentation rate. Unless the tenderness had greatly decreased from that of the previous examination, the patient was prepared for operation. The skin incision is made over the area of maximum tenderness, the periosteum is split, and the subperiosteal abscess is evacuated, several small perforations are made through the cortex with a drill to relieve tension. The tourniquet is then removed, hemostasis is effected, penicillin powder, 200,000 units, is sprinkled into the wound, and the skin is sutured without drainage. The limb is then immobilized. Five days after the operation, the wound is reexamined and any hematoma is aspirated. The stitches are removed on the 10th day, and a plaster cast is applied. If the operation has succeeded in preventing involucrum formation, the bone will be particularly liable to fracture in the repair stage. Penicillin treatment is continued for three weeks. Immobilization is maintained for as long as signs of bone inflammation persist, after this the patient is allowed to walk or to use the limb according to the changes observed in the radio-graphs. Complete bone healing has so far been obtained in 66 cases. The quality of the results depends on the nature of the treatment and also on the age of the patient at the onset of infection. Complete healing was more frequent when the patient was closer to the beginning than to the end of childhood. Infants and adults present their own characteristic forms of the disease. Prolonged follow-up with radiological control is essential.

"Essential" and "Nonessential" Amino Acids in Urine of Severely Burned Patients G L Nardi J Clin Invest 33 847-854 (June) 1954 [New York]

The negative nitrogen balance of thermal trauma is recognized, but its meaning and significance to body metabolism are poorly understood. Partition of urinary nitrogen may assist in interpreting the significance of nitrogen loss. Some investigators have found an increase in nonprotein urinary nitrogen of burned patients. This was chiefly due to undetermined nitrogen, the latter defined as the difference between the total nonprotein nitrogen and the sum of urea, uric acid, creatinine, and alpha-amino nitrogen. To analyze this partition further, Nardi studied the urinary amino acid excretion in five healthy subjects (laboratory personnel), in six severely burned patients, and in patients undergoing surgical operations. He found an abnormal

amino-aciduria consisting of excretion of "essential" amino acids not normally present in urine as well as increased quantities of 'nonessential' amino acids in the urines of severely burned or traumatized patients. The qualitative and quantitative aspects of this amino-aciduria may be proportional to the severity of the trauma. The amino acid excretion was influenced by, but not completely dependent on, the total urinary nitrogen. Hyperactivity of the adrenal cortex as seen in Cushing's disease resulted in a moderate degree of amino-aciduria. The latter effect was not reproduced by a daily maintenance dose of 30 mg. of cortisone after bilateral subtotal adrenalectomy. This escape of amino acids is most likely due to a failure of tubular reabsorption. The reason for the latter is not clear, but it may be due to some adrenal steroid other than cortisone, to an abnormal amino acid pattern presented to the tubule, or to some other factor.

Mediastinal Parathyroid Adenoma C E. Catlow West J Surg. 62 352-353 (June) 1954 [Portland, Ore]

In the 50 year-old man whose case is reported, the history and the blood calcium values indicated hyperparathyroidism. Surgical exploration of the neck disclosed no parathyroid adenoma. It was decided that in a second operation the superior mediastinum should be explored. However, on the fourth post-operative day basilar pneumonia developed, it was followed by cardiac decompensation and death on the fifth postoperative day. Autopsy revealed a mass in the superior mediastinum, which on microscopic study showed the typical picture of a parathyroid adenoma. This case emphasizes the necessity of exploring the mediastinum after fruitless neck exploration.

A New Operation for Mitral Regurgitation J Hayward Australian & New Zealand J Surg. 23 257-267 (May) 1954 [Melbourne, Australia]

Hayward suggests that most cases of mitral disease can be provisionally diagnosed as mitral stenosis or mitral regurgitation. Fused commissures are characteristic of typical mitral stenosis. These cases are ideal for valvotomy. Open or partly open commissures are typical of the valve of mitral regurgitation. This second group he subdivides into group 2a, in which the function of the posterior cusp is permanently destroyed, and group 2b, in which the function of both cusps is permanently destroyed. In addition to the two main groups, the author recognizes a small intermediate group with conical or elastic valve, in which stenosis and regurgitation may simultaneously be significant causes of circulatory trouble. In this intermediate group valvotomy is likely to be disappointing. Before describing his new operation for mitral regurgitation Hayward says that strips of pericardium, plastic substances, and other devices are being tried to relieve mitral regurgitation by attempting to produce either a solid buttress over the edge of or just under the posterior cusp, or a movable structure with valvular action below the orifice. None has so far proved satisfactory. In his new operation the left auricular appendage is invaginated through the mitral valve orifice and attached to the left ventricular wall under the posterior cusp. It is suitable for cases belonging to group 2a. The author presents the histories of two patients in whom this operation was employed, and he also lists advantages and limitations. In an addendum to this paper he admits that both patients after immediate encouraging results deteriorated to a condition similar to, or perhaps slightly worse than, their preoperative state. In each case the retrogression began gradually about six weeks after the operation. The reason for its failure is not known with certainty. It may be that the theoretical basis advanced for it is false, but the unmistakable initial improvement in both cases seems against this conclusion. Perhaps it is more likely that the auricular appendage has failed to become fixed in the new position because endocardium has not fused with endocardium, and that it has therefore gradually escaped from the sutures and retracted out of the valve orifice. Only postmortem examination will show if this has occurred, and both patients are still alive. It is hoped that despite these failures this report may yet be a stepping stone on the difficult path to successful surgery for mitral regurgitation.

Vagotomy and Gastroenterostomy in the Treatment of Duodenal Ulcer K R Trueman and D L. Kippen Canad. M A J 70 514-517 (May) 1954 [Montreal, Canada]

From May, 1946, when vagotomy in combination with posterior gastroenterostomy was first used at the Winnipeg Clinic, until December, 1951, 1,603 patients with duodenal ulcer were observed, and 377 (23%) of these submitted to surgery. Partial gastric resection was done in 247, vagotomy plus gastroenterostomy in 79, vagotomy alone in 30, and vagotomy plus gastric resection in 21 cases. The 79 patients on whom vagotomy plus gastroenterostomy was done were regarded as intractable, the majority being referred through the medical department for surgery. The average duration of symptoms exceeded 12 years. Hemorrhage occurred on one or more occasions in 35 patients, 19 of whom described hematemesis in addition to melena. Perforation was reported in 15 cases, of whom eight had also bled. Obstruction, as evidenced radiologically by narrowing of the duodenal channel, with marked gastric retention was present in 25 patients. Fifty-one of the 79 patients were interviewed and examined at regular intervals after operation, but questionnaires were sent to all 79, and 72 of these were answered. Of the remaining seven patients, three are known to have died and only four could not be traced. Good results, which imply absence of ulcer recurrence or gastrointestinal symptoms of any consequence, return to normal weight, and ability to resume the previous occupation were obtained in 56 patients. Fair results, that is, freedom from ulcer distress or recurrence, but the presence of slight or moderate side-effects of the operation such as bloating or diarrhea, were observed in seven patients. The remaining nine patients had poor results, having symptoms indicative of recurrence, such as typical ulcer pain, hemorrhage, signs of a crater in the roentgenogram, severe side-effects, such as frequent vomiting or diarrhea, marked restriction of diet or regular use of antacids, and loss of weight and strength or inability to resume previous occupation. Since those classed as fair were quite satisfactory from the standpoint of ulcer control, the diathesis of the duodenal ulcer appears to have been satisfactorily controlled in about 85% of the patients who had vagotomy.

Mammary Cancer Treated by Bilateral Adrenalectomy L. N. Pyrah and F G Smiddy Lancet 1 1041-1047 (May 22) 1954 [London, England]

Twenty-two patients with advanced mammary carcinoma with metastases underwent bilateral adrenalectomy and bilateral gonadectomy. One died soon after operation, and 8 either died from cancer or showed no improvement, 10 improved, and 5 of these had a major remission, with great improvement in the general health and with demonstrable regression of the primary growth (if still present) and its visible metastases, and with well-marked radiographic improvement of osseous and thoracic cancerous deposits. It is not known whether these regressions are permanent. The authors' results confirm the work of Huggins and his co-workers that a favorable response sometimes follows bilateral adrenalectomy and oophorectomy. Tumors having an alveolar or adenomatous structure appear to respond most favorably to this treatment, but it appears to be unwise to rely on a single biopsy before rejecting a case as unsuitable for adrenalectomy.

Fat Embolism. A Clinical and Experimental Study of Mechanisms Involved R. L. Swank and G S Dugger Surg., Gynec & Obst. 98 641-652 (June) 1954 [Chicago]

Swank and Dugger say that they have become increasingly aware in recent years that cerebral fat embolism may occur early after injury and without pulmonary symptoms. These patients may have cerebral concussion complicating fractures, or large area body mutilations, and may recover consciousness in a relatively short time, only to become stuporous again in a few hours. The entire course of these events may take no longer than 6 to 12 hours. These patients subsequently recover or die in 24 to 48 hours. Gross brain lesions are frequently absent at autopsy, but in some cases fat emboli can be demonstrated particularly in the brain and lungs. The authors cite two patients who had been injured in automobile accidents. The manifesta-

tions of fat embolism were primarily cerebral in both cases. In the first case progression to death was relatively fast, but in the second case a temporary stabilization occurred after early cerebral embolism, and this was later followed by pulmonary distress and manifestations of cerebral involvement and death. These early manifestations of cerebral embolism are frequently overlooked because it is generally held that the clinical manifestations of fat embolism are delayed for 48 to 72 hours and are at first pulmonary. Only after the development of shortness of breath, hemorrhagic sputum, and rales at the bases of the lungs is it thought that signs of cerebral embolism develop, namely excitement, stupor, convulsions, paralyses, and coma. The authors present experiments on rabbits, which were carried out to explain the early onset of cerebral manifestations in some cases of fat embolism in which major fractures and head concussion or anesthesia coexist and to clarify some of the factors involved in the mobilization of the fat forming the emboli. These experiments suggest that an important source of the fat emboli is circulating fat globules, which are held much of the time in the capillaries of the general and pulmonary circulation. The early onset of cerebral symptoms of fat embolism is due probably to either shock and unconsciousness or to anesthesia, all of which presumably relax the vascular bed and allow the circulating fat plus the fat from the fractured bones to be washed through the pulmonary circulation to the brain. It is suggested that dark-field examination of whole blood, to determine the amount and sizes of the circulating fat globules in the blood, would be a useful adjunct to the early diagnosis of fat embolism.

NEUROLOGY & PSYCHIATRY

Relationship of Retrobulbar Neuritis to Multiple Sclerosis
R G Taub and C W Rucker. *Am J Ophth* 37:494-497 (April) 1954 [Chicago]

An episode of acute retrobulbar neuritis is recognized as a possible primary symptom of multiple sclerosis. A follow-up study was made in 1953 of patients with acute retrobulbar neuritis of undetermined origin who had been seen at the Mayo Clinic in the period 1937 to 1942, inclusive. This gave an interval of 10 to 15 years after the episode of acute retrobulbar neuritis. Twenty-five of 118 patients with acute retrobulbar neuritis could not be located, and 6 others had died before 10 years had elapsed after their bout of retrobulbar neuritis, but none of these 6 had signs of multiple sclerosis been evident before death. The 87 patients available for study were divided into three groups on the basis of age. There were seven patients less than 20 years old, and multiple sclerosis developed in one of these. Fifty-seven patients were between 20 and 44 years old, and in 26, or 45%, multiple sclerosis developed. The time between the initial bout of retrobulbar neuritis and the development of symptoms of multiple sclerosis could be determined in 23 of the 26 cases and ranged between one and 14 years. In more than half of the 23 cases, the onset of multiple sclerosis fell within the first five years. Multiple sclerosis developed in only one of the 23 patients of the third group, who were more than 44 years old. Thus the data indicated that, if a person between 20 and 44 years has an attack of retrobulbar neuritis, there is a 40 to 50% chance that multiple sclerosis will develop within 10 to 15 years. In the cases in which retrobulbar neuritis occurs before the age of 20 years, the chance that multiple sclerosis will appear is less likely, and, when it occurs after the age of 44 years, the chance is remote.

Pain in Paraplegia: Clinical Management and Surgical Treatment
E H Botterell, J C Callaghan and A T Jousse. *Proc Roy Soc Med* 47:281-288 (April) 1954 [London, England]

Spinal cord injury is followed by diminished or absent sensation below the level of the lesion. Nevertheless, pain is frequently referred to the portion of the body rendered anesthetic. Botterell and his associates investigated pain in 125 patients with traumatic paraplegia who were treated in a Veterans Affairs neurosurgical unit in Toronto, Canada. A questionnaire was filled out by each, and 34 were interviewed personally. Patients who suffer most severely describe their pain as "sharp,"

"a dull ache," or "vise-like." This is commonly superimposed on a background of burning pain. The pain in paraplegia is referred to the dermatome corresponding to the injured segment of cord or the anesthetized area below it and is described by the patient on the basis of past experience of pain. One hundred eighteen of the 125 patients with traumatic paraplegia complained of pain. Twenty-nine of the 38 patients who had pain of troublesome severity were able to leave the hospital, although the severity of their pain interfered at times with sleep and appetite as well as with vocational and diversional activities. Some members of this group may yet require surgical treatment. The incidence of severe pain is low in cervical injuries, higher in thoracic and complete conus or cauda lesions, and is commonest after partial destruction of the cauda equina and conus medullaris. Patients may suffer severe pain at the moment of injury or as soon as consciousness is regained and are never free of pain thereafter. In other cases, the onset of pain may be delayed for years. Therefore, in those patients who are at present pain-free, central pain may develop. Distention of the bladder by excessive residual urine, bladder spasms resulting from infection or calculi, and constipation producing distention of the large intestine were local conditions enhancing pain. Successful treatment requires an understanding of the patient's emotional and psychological, as well as physical, requirements. If these needs are met, the majority of patients learn to live with their pain. Nine patients had to be relieved by surgical means. Bilateral spinothalamic tractotomy at the level of the first or second thoracic vertebra or higher proved most efficacious in relief of pain. The histories of six patients who underwent this treatment and who have been followed for from two to eight years are reported. One patient underwent bilateral frontal lobotomy and has been followed for five years. He has retained the ability for planned thinking, a good sense of humor, and concern over the welfare of his family.

Hypnotic Treatment of Phantom Sensation in 100 Amputees.
C Cedercreutz. *Acta chir scandinav* 107:158-162 (No 2-3) 1954 (In English) [Stockholm, Sweden]

Hypnotic sleep was given as a therapeutic trial in 92 men and 8 women with phantom limb and accompanying phantom sensations after amputation. Of the 100 patients, hypnosis with posthypnotic anesthesia (complete insensibility of the stump after awakening) was achieved in 19 and hypnosis without posthypnotic anesthesia in 26, while the remaining 55 patients could not be hypnotized. Deep as well as light hypnosis affected the phantom sensation in the desired direction. The number of hypnotic sessions required to eliminate the symptoms varied from one to 23. Freedom from symptoms or considerable improvement was obtained in all patients in whom posthypnotic anesthesia was achieved. The patient's age, sex, the location of the phantom, or the period elapsed between the amputation and hypnotic treatment did not exert any effect on the results, which were favorable in 35 patients. Twenty-two of these obtained complete relief from symptoms with disappearance of pain and phantom, pain subsided but the phantom did not vanish completely in 5, appreciable easing of pain and lasting changes in the shape of the phantom occurred in 8. Positive results thus were obtained in more than one-third of the patients. Several of these patients are still free from symptoms three years after completion of the treatment. Late relapses after hypnotic treatment occurred in 12 patients. If the phantom responded quickly to treatment and subsided after two to three hypnotic sessions, long-lasting effects were mostly achieved. If the phantom underwent regressive changes in the course of the treatment or if more than seven hypnotic sessions were required for its elimination, the incidence of relapse was high. This also applies to those cases in which the phantom could not be eliminated entirely.

Memory Disturbances in Third Ventricle Tumours.
M Williams and J Pennybacker. *J Neurol, Neurosurg & Psychiat* 17:115-123 (May) 1954 [London, England]

One hundred eighty patients with verified intracranial lesions were interviewed by psychologists in a neurosurgical unit in order to ascertain whether there is any area of the brain the

destruction of which is specifically associated with impairment of memory. Four cases in which impairment of memory and site of lesion were clearly defined and well localized are described in detail. The incidence of memory disturbances in tumors of the third ventricle was compared with that in other localized intracerebral tumors. Patients with obvious and clear-cut defects of memory were examined for the commonest site of lesion. All analyses support the conclusion that memory impairment is most common and specific when the area surrounding the floor and walls of the third ventricle is disturbed. Lesions further forward, in the frontal area, often result in the patients not bothering to use their memories, while lesions of a cerebral hemisphere may cause loss of memory for particular skills, but the patients remain capable of remembering events, lesions of the posterior fossa may make the patients retarded and depressed and unable to think of remembering. With lesions in and around the third ventricle, however, the patients frequently retain good personality and intellect but show gross defects of memory. The loss is not for particular events, nor for immediate appreciation of impressions, it is rather for their normal endurance and retention. Apart from the site of the lesion, however, it is possible that other factors may be involved in determining the memory disturbance.

Results of Radioactive Isotope Encephalography in Patients with Verified Intracranial Tumors. L. Davis and T. Craigmille. *J Neurosurg.* 11 262-267 (May) 1954 [Springfield, Ill.]

The results of isotope encephalography, performed after the administration of radioactive diiodofluorescein or radioactive sodium iodide in 200 patients with verified primary or metastatic intracranial tumors, are reviewed. Primary intracranial tumors were found in 174 patients, while metastatic neoplastic lesions were encountered in 26 patients. The original end-window Geiger-Mueller counter was used in the majority of the studies, but recently a more nearly accurate scintillation counter was used. No attempt was made to classify the results on the basis of the counting device used. Analysis of these results reveals a slightly higher incidence of accurate findings after the use of diiodofluorescein. In patients with primary intracranial tumors, the use of this substance resulted in accurate localization of the later verified lesion in 61.6% of the patients examined. The use of radioactive sodium iodide gave a precise indication of the site of the neoplasm in 52.8% of the patients examined by that method. In 21 patients with metastatic intracranial tumors, studies following administration of diiodofluorescein showed evidence of the presence of an organic lesion in about 76%. Precise localization of a solitary metastatic nodule was obtained in 47.6% of the patients examined. The results of the examination following injection of radioactive sodium iodide in five patients with metastatic lesions were far from encouraging. One person with a solitary nodule displayed a generalized increase in radioactivity without evidence of focal concentration. All others similarly examined showed no abnormalities in their tracings.

Nocardiosis of the Central Nervous System. E. G. Krueger, L. Norsa, M. Kenney and P. A. Price. *J Neurosurg.* 11 226-233 (May) 1954 [Springfield, Ill.]

A case of pulmonary nocardiosis with development of a metastatic cerebral abscess is reported. The patient, a 42-year-old Negro man, underwent successful excision of a left frontal abscess and received penicillin and chlortetracycline (Aureomycin) in the postoperative course. Complete remission ensued and has lasted 15 months after surgery and 13 months after discontinuance of antibiotic therapy. Tests run on the *Nocardia* isolated from the abscess showed the organism to be sensitive to chlortetracycline. This is the 20th case of nocardiosis of the central nervous system to be reported. The patients range in age from 20 to 65 years, and men are affected oftener than women. In general, neurological symptoms begin several months after the onset of extraneural manifestations such as cough or subcutaneous abscesses. Clinically, no distinct entity exists, neurological signs are related to localization within the central nervous system and to increased intracranial pressure. Patho-

logically, focal abscesses are much commoner than primary meningitis. In almost all the autopsies there were additional visceral lesions predominantly in the lungs and the subcutaneous tissues. The authors believe that, in a case of nocardiosis with a cerebral abscess, early surgical removal accompanied by intensive administration of sulfonamide drugs and of broad spectrum antibiotics is the treatment of choice.

On the Inheritance of Epilepsy. O. P. Kimball. *Wisconsin M J* 53 271-276 (May) 1954 [Madison, Wis.]

Kimball made his studies mostly at the White Special School for Epilepsy in Detroit, the first school of its type in the United States, which was established in 1935. He also investigated cases in his private practice. He explains his point of view on the basis of the history of a family, one child of which attended the aforementioned school. It was learned that his mother had seizures during childhood and adolescence, but when she was 17 the seizures stopped. She had eight living children, and only one had seizures. The electroencephalograms of the father and three children were normal. The mother and five children had electroencephalographic records indicative of epilepsy, yet only the one child had seizures. The author applies the term "potential epilepsy" to the other four children who had the genetic potential" for epilepsy, but not clinical seizures. When environmental changes occur in the person with potential epilepsy, clinical seizures may start, and potential epilepsy may become real epilepsy. The author feels that this combination of genetics and environment is responsible for the existing confusion. That epilepsy is hereditary is shown by the high degree of concordance in monozygotic twins and by the fact that the incidence of epilepsy among the relatives of epileptics decreases as the relationship becomes more distant. The analysis of 520 sibships in which at least one sib was epileptic is the main purpose of this report. Every history was taken, and the follow-up notes were made by the author through a continuous study for over 20 years. Before the special school in Detroit opened, the author found what every student of epilepsy has found in attempting to obtain family histories, either the family did not know, or was unwilling to admit an inherited tendency to epilepsy. Repeated attempts over a period of years frequently produced an accurate history. The attitude of the parents changed when they learned that a special school was ready to accept their child, transport him to and from school, care for him, provide adequate educational facilities, and give medical treatment. In a table that lists the results of investigations on 294 families in which one parent was epileptic, and in which there was a total of 1,070 children, there were 399 epileptic children (37.3%). In 222 families, in which neither parent was epileptic, but in which epilepsy was in the families, there were 772 children, of whom 274 had epilepsy (35.5%). In four families with 25 children, in which both parents were epileptic, 20 or 80% of the children were epileptic. The genealogy of several families with epilepsy is discussed, one, going back to 1630, showed the occurrence of epilepsy in almost every generation, but there had never been a case of epilepsy in childhood, convulsions always started at middle life, usually in the early 40s. The women thought that their epilepsy was due to menopausal change. The author's patient with this type of epilepsy was 42 years old when nocturnal convulsions started. What is to be the answer when a person with epilepsy seeks advice about marriage and having children? If the diagnosis is brain injury with convulsions, then there is no reason for worry over heredity. However, if the diagnosis is genetic epilepsy, he should be told that his disease could be, and probably would be, passed on to his children. In fact, more than one third of children of epilepsy patients are themselves affected. Even if the children are not so afflicted, the grandchildren might be.

Serology of Multiple Sclerosis. E. Frick. *Klin Wchnschr* 32 450-452 (May) 1954 (In German) [Berlin, Germany]

Frick points out that Sachs and Steiner reported on serologic studies in multiple sclerosis in 1934 using as antigen an alcoholic extract from the brain of patients who had died of multiple sclerosis. They performed complement fixation tests in 289 cases and obtained positive reactions in 41%. They had assumed

that this serologic reaction represented an antibody function against an infectious organism or against a pathological substance in the central nervous system. These investigations were forgotten until Frick resumed the studies in 1951, closely adhering to the method employed by Sachs and Steiner. Roemer, Schrader, and Schild reported two recent studies yielding positive results in about 50% of 60 patients with clinically established multiple sclerosis, particularly in those with acute exacerbations. In order to establish the specificity of the reaction they examined the serums of 159 patients with other neurological disorders as well as of 269 patients with internal diseases. In the patients with neurological diseases 31% showed positive reactions and of those with internal disorders nearly 10%, but in the latter the serum lability reaction was also usually positive. Frick recently made the test on 51 patients with multiple sclerosis. The result was positive in 25 of these patients, doubtful in 5 and negative in 21. Positive reactions were more frequent in the acute than in the chronic forms, but positive results were observed also when acute exacerbations appeared in chronic cases. The author used as antigens formaldehyde-fixed cerebral and spinal tissues of patients with multiple sclerosis, in whom the diagnosis had been established by histological examination. The technique employed was that of the complement-fixation method. Six antigenic extracts yielded largely identical results. Frick found that antigen prepared from normal brain tissue produced equally good results. He feels that the final evaluation of the serologic findings is impossible as long as the antigen has not been chemically analyzed. The suggestion of Roemer, Schrader, and Schild that the antigen is a lipid or a lipoprotein is shared by Frick. He doubts, however, that it is a substance that occurs exclusively in the brain of patients with polysclerosis, and feels that as yet the serologic reaction cannot be employed to solve etiological or pathogenetic problems of multiple sclerosis. His preliminary conclusion is that the described method permits the demonstration of antibodies in patients with multiple sclerosis and that the presence of these antibodies depends on the state of activity of the disease process. By inactivating the serums at 60 C (140 F) the specificity of the results could be greatly improved and lability reactions simulating positive results could be excluded.

GYNECOLOGY & OBSTETRICS

Morbidity in Vaginal Hysterectomy J H Pratt and Q Scheraga. *Am J Obst & Gynec* 67 1323-1337 (June) 1954 [St Louis]

A four year study was made of 514 patients undergoing vaginal hysterectomies with or without vaginal repair. The distribution of patients was comparable in the four years with regard to number, age, and association of repair, but the pre-operative preparatory routine was changed each year and the various methods compared in relation to postoperative morbidity. The criterion for morbidity was temperature elevation above 100.4 F on any two days following the day of operation, the authors realize this is far from an ideal standard, but it is objective and has been used in other similar studies. The intravaginal use of a suppository containing 100,000 units of penicillin the night before operation was the most effective means of reducing morbidity of any of the methods tried. The introduction of 5 gm of sulfathiazole into the peritoneal cavity was helpful but the increase in morbidity after the elimination of this procedure from the routine was not marked. In patients on whom hysterectomy and vaginal repair were done, the combined use of penicillin and sulfathiazole reduced the morbidity the most, this effect was primarily on patients 50 years old or less. *Phisoderm*, a detergent cream composed of sulfonated ether, petroleum, lactic acid, and wool fat cholesterol, was helpful in reducing morbidity but not so effective as the vaginal suppositories of penicillin. The number of serious complications in this series was encouragingly low, however, five patients had to be operated on again within a few hours because of retroperitoneal hemorrhage. There were also 10 patients with vaginal bleeding of mild to moderate degree and 11 others with hematomas of the vaginal vault or the deep pelvic spaces. There

were two cases of thrombophlebitis of the deep veins and three of the superficial veins and one of questionable thrombophlebitis. No cases of allergy were encountered in the year in which the routine use of sulfathiazole was discontinued. Urinary retention was numerically the biggest single problem encountered in this series of patients, but, although it caused additional days in the hospital, few elevations in temperature could be blamed on it alone. The variation in vaginal preparation had no effect whatever on the stay in the hospital. Patients with vaginal repairs averaged three days longer in the hospital than those without. Patients who had morbidity were one day longer in the hospital than patients without. Hospital stay averaged one or two days longer for older patients than for younger. However, morbidity was less frequent among the women past 60 years of age. These patients usually had vaginal repair but their uteri tended to be small and atrophic. Loss of blood was less in the older women, the operation went faster, and the anesthetics were of shorter duration. All of these things are factors in lowering morbidity.

Removal of 184 Pound Ovarian Tumor, and Observations Regarding Splanchnic Shock D H Eames Jr. *Am J Obst & Gynec* 67 1358-1364 (June) 1954 [St Louis]

The removal of a 184 lb (83.5 kg.) serous and pseudo mucinous cystadenocarcinoma of the left ovary of a 44-year-old woman, the 13th largest ovarian tumor reported in the literature, gave the author a chance to observe the effect of sudden release of acute intra-abdominal pressure. It was decided to remove the tumor whole, because tapping and draining represents a danger of allowing malignant cells to escape within the peritoneum. The operation lasted three hours. The lowest depression of the patient's blood pressure was to 78/48 mm. Hg and occurred during the time she was being moved from the left lateral to the supine position for closure of the incision. This is not an unusual reaction and was reversed on cessation of manipulation. The author is of the opinion that splanchnic shock caused by removal of large abdominal tumors is by no means constant in its appearance and is rather uncommon. When it does appear, it is usually manifested some hours after the release in pressure, as a rule 4 to 24 hours later, and the use of "slow" decompression is poor prophylaxis. Instead, the most logical course of action seems to be the removal intact of such large tumors in order to face the possibilities of reaction with the patient in optimum physical state. With the use of whole blood and modern drugs this possibility has become secondary to the evils accompanying the drainage of any large ovarian tumor, and size alone should no longer be considered an indication for drainage rather than intact removal.

Neurogenesis in Ovarian Tumor H Selinke and E Pumares Mogimes. *An Fac méd Montevideo* 38 337-342 (Sept-Oct) 1953 (In Spanish) [Montevideo, Uruguay]

A woman 32 years old had a simple ovarian teratoma removed. The operation was followed by development of intraperitoneal metastases and cachexia. At the end of six months after the operation the abdomen of the patient was larger than that of a woman at full-term pregnancy. In a second operation multiple metastases were removed from the peritoneal cavity. The removed tumors were encapsulated, pedunculated, and independent from one another. They contained typical teratoma tissue and a great number of large masses of cerebroid tissue, enclosed in a fibrous meningeal-like membrane. Histological preparations of the cerebroid masses consisted of lobules lined with ectodermal epithelium, neuroblasts in different stages of differentiation and adult neurons, either normal or in a process of degeneration. The stage of development of the nervous tissues was clearly identified with the stains of Bielschowsky and of Rio Hortega. The patient died. A necropsy was not permitted. The authors believe that the histogenesis of neural tissue in teratoma depends on the intratumoral presence of archenteron-like structures that function as archenteron functions in normal embryos. The former in teratoma and the latter in normal embryos induce differentiation of tissue with consequent formation and development of nervous tissue. The tubules lined with ectodermal epithelium

observed by the authors in histological preparations of cerebroid tissues appear to have been the archenteron like structures in the case reported

PEDIATRICS

Studies of Serum Electrolyte Changes During Exchange Transfusion G Miller, A B McCoord, H A Joos and S W Clausen *Pediatrics* 13 412-418 (May) 1954 [Springfield, Ill.]

Eight infants with erythroblastosis fetalis were treated by exchange transfusion within the first 36 hours of life and were studied in relation to serum electrolyte changes. It was established by tests that hyperkalemia was induced in two of these patients and aggravated in one in whom it was already present. There were no clinical signs or symptoms of hyperkalemia. The elevated plasma potassium content of citrated whole blood following prolonged storage may produce hyperkalemia in some infants. It is suggested that hyperkalemia and hypocalcemia may coexist in some of these babies during exchange transfusion. This potential risk can and should be minimized by the use of relatively fresh blood and the judicious administration of calcium during replacement transfusion with citrated whole blood.

Viral Hepatitis in Early Infancy Report of Three Fatal Cases in Siblings Simulating Biliary Atresia R. B. Scott, W. Wilkins and A. Kessler *Pediatrics* 13 447-453 (May) 1954 [Springfield, Ill.]

Three fatal cases of hepatitis with jaundice are reported in siblings with onset at ages of four weeks, one week, and four months and death at three months, four months, and nine months, respectively. In these cases, the disease simulated the clinical picture of biliary atresia. Exploratory laparotomy, performed in all three, revealed biliary atresia in only one, cholecystoduodenostomy was performed and failed to ameliorate the condition. Microscopic findings in postmortem sections of the liver were consistent with a diagnosis of viral hepatitis. From the data available, it appeared to be of the homologous serum type. The mother and two living siblings exhibited laboratory evidence of liver damage. Failure to include a consideration of congenital viral hepatitis in the differential diagnosis of icterus in the very young infant may have serious consequences, since these patients do not withstand surgical procedures very well. The authors feel that the deaths of their three patients, although unavoidable, were perhaps hastened by surgery.

Evaluation of Large Doses of Cortisone in First Attacks of Rheumatic Carditis E. T. Heffer, R. D. Turn, S. R. Slater, and I. G. Kroop *J. Pediat* 44 630-639 (June) 1954 [St. Louis]

Nineteen children in their first attacks of rheumatic fever with carditis were treated with cortisone in larger doses than those used by the International Cooperative Study. The initial total daily dose of cortisone was between 200 and 300 mg given in four divided oral doses. This dose was usually continued for at least two weeks or even longer, until the clinical and laboratory findings indicated maximal suppression of the disease. It was only then that the dose was reduced gradually. On the average 200 to 300 mg of cortisone was given for two weeks, 150 mg for one to two weeks, 100 mg for one week, and 50 mg for one week. Dosage was individualized according to the severity of the disease and its course. Before treatment was started, all 19 patients had significant organic murmurs, 11 had cardiac enlargement as demonstrated by fluoroscopy and roentgenogram. Fifteen patients had abnormal electrocardiographic findings, and three had heart failure. Of the 19 patients, 13 with monocyclic attacks of rheumatic fever had no residual cardiac involvement after treatment. 10 of these were treated within the first two weeks of their illness. Six patients had residual systolic murmurs after cortisone therapy. These patients were treated late in the disease and either had a long protracted low grade activity or a polycyclic course. The immediate suppressive effect of cortisone on symptoms of carditis was remarkable. In three severely ill chil-

dren, cortisone therapy was considered lifesaving. In one of these patients salicylates had been ineffective. Gallop rhythm usually disappeared within four days, and tachycardia responded to treatment within a week, except in those patients with carditis of several weeks duration before therapy was begun. In several patients, cortisone produced sinus bradycardia and arrhythmia with nodal escape. The prolonged P-R interval usually returned to normal within two weeks. The friction rub that was present in two patients before the treatment disappeared within four days. No new murmurs developed in the 19 patients. There were no complications despite the high total dosage of cortisone employed. The Cushing habitus with moonface, obesity, and striae developed in all patients. Mild facial hirsutism and acne never necessitated cessation of treatment. Elevation of the blood sugar and glycosuria were not observed. Hepatomegaly observed in the first week or two probably represented congestive failure induced by an endogenous water shift secondary to cortisone therapy. Hepatomegaly, which was observed later, probably represented fatty infiltration of the liver. In both cases, there was no contraindication to continued cortisone therapy. The patient with a monocyclic attack of rheumatic fever has a better chance of escaping cardiac damage if he is adequately treated early in the disease. The number of cases reported on is too small for drawing definite conclusions, but the trend shown warrants the use of larger doses of cortisone given early in the disease and continued for a long enough period. In this way it may be possible to prevent residual valvular damage in a monocyclic attack. The authors' experience also indicates that cortisone in adequate dosage may be more effective than salicylates in controlling carditis.

Comparative Study of Children with Bone and Joint Tuberculosis Treated With and Without Tuberculostatic Drugs M. Modena. *Wien med. Wchnschr* 104 359-360 (May 1) 1954 (In German) [Vienna, Austria]

The course of bone and joint tuberculosis in 363 children treated by the old methods of sun irradiation and general measures was compared with that in 115 children between the ages of 1 and 12 years treated with streptomycin and *p*-aminosalicylic acid. Dihydrostreptomycin was preferred because of its lesser toxicity. It was given in doses of 0.33 gm daily to children between the ages of 1 and 6 to 7 years, and in doses of 0.5 gm daily to children between the ages of 7 and 12 years. The total maximum dose was 80 gm, the average total dose varied from 30 to 40 gm. The treatment scheme varied according to the location and severity of the lesion. There were only three patients who were resistant to streptomycin. *p*-Aminosalicylic acid was given in doses of 0.2 gm per kilogram of body weight, and the average total dose was 300 gm. The average duration of the disease was shortened by the treatment with these drugs. Attempts were made at reducing the application of plaster of Paris casts to a minimum. The patients were confined to bed for 6 to 18 months on the average and then were allowed to get up with a supporting apparatus of the type of Thomas splint. Modena considers it more important to relieve the lower extremities of the body weight, than to immobilize them with plaster casts. Joint function with resulting active mobility, varying from one-third of normal to completely normal, was obtained in 88.4% of the patients with tuberculosis of the hip joint and of the knee joint. The response of the tuberculous process of the bone to the antibiotic treatment was slowest in patients with spondylitis. In the most favorable cases, arrest of the disease occurred about the sixth month, and the first signs of repair were observed between the 10th and 12th months. Plaster corsets should be used less frequently, since the most satisfactory results were obtained exclusively with rest cures with Bradford frames. Of six patients with tuberculosis of the foot treated with antibiotics, five obtained two-thirds of their normal mobility and ankylosis occurred in one. Satisfactory healing occurred within 12 months in two patients with tuberculous sacrocoxitis. The earlier the diagnosis, the better were the results. Although tubercle bacilli may not be demonstrated in the early stage of the disease, a therapeutic trial with the tuberculostatic drugs should not be delayed in the presence of a relationship between history and clinical findings.

DERMATOLOGY

Tinea Capitis Caused by *Microsporum Canis* Report of an Outbreak in Dunedin Institution M J Marples and E N Chapman New Zealand M J 53 158-162 (April) 1954 [Wellington New Zealand]

Marples and Chapman describe an outbreak of ringworm of the scalp due to *Microsporum canis* in the Dunedin Receiving Home of wards of the state. Eight of the 10 resident children were found to be infected. Examination of 92 school contacts failed to demonstrate any transmission of infection. The origin of the outbreak could not be traced. The institution did not own a cat, and an elderly cat belonging to a neighbor showed no evidence of infection. There were a large number of cats, including kittens, living on the grounds of an adjacent empty house. These cats had become very wild and could not be collected for examination. They had the habit of sleeping and sunning themselves in the uncovered sandpit belonging to the institution. *M. canis* characteristically causes small family outbreaks but not widespread epidemics of ringworm. The transfer appears to be domiciliary and requires close contact. When outbreaks occur in families whose cat or dog can be shown to be infected, it is not possible to discover which of the individual infections represent animal to child or child to child transmissions. In the outbreak described here there was considerable evidence that some child to child transmissions of infection occurred within the institution. It is difficult to believe that all the children concerned were directly infected from cat hairs, since they did not play with the semiwild cats and had not actually handled any cat that could be demonstrated as infected. Furthermore, although infections in all but two of the children were observed within a few days of one another, there were indications at the initial examination with Wood's light that the lesions were not all at the same stage of evolution. The majority of scalp ringworms in New Zealand are caused by the dermatophyte *M. canis*. This fungus is primarily adapted to parasitic life on domestic pets. Although it can and does infect humans, its virulence is decreased in man. Lesions of the scalp respond to treatment with topical applications and may clear up spontaneously even before puberty. Further, child to child transmissions are not very common, the organism losing its invasiveness after a few human passages. The authors feel that the regulations restricting the school attendance of children with scalp ringworm should be reconsidered, since the close contact necessary for human transmission of infection need not occur in school. The described outbreak shows that, although within the institution child to child transmissions did occur, no transfer of infection to school contacts could be demonstrated.

Isoniazid in Treatment of Lepromatous Leprosy I Sigall M Arq mineir leprol 13 187-194 (July) 1953 (In Spanish) [Minas Gerais, Brazil]

This is a preliminary report on the results of isoniazid therapy in 18 patients with leprosy of the lepromatous type. The initial dose of 200 mg was increased at weekly intervals up to a daily dose of 800 or 900 mg. The total dose varied between 44 and 144 gm in 4 to 10 months. The general condition and the appetite of the patients showed improvement early in the course of the treatment. The number of bacilli in the skin and in the nasal mucosa diminished or disappeared. Marked clinical improvement was observed. Infiltration was controlled, maculas disappeared, the volume of the nodules diminished, erythema subsided, and acute extensive recurrences did not reappear. Satisfactory results from isoniazid alone were obtained in two patients who received the drug for five and eight and one-half months, respectively. In four patients the bacilli became resistant within six or eight months in the course of administration of isoniazid alone. Isoniazid combined with sulfonamides for an additional period of three to five and one-half months gave satisfactory results. The best results of isoniazid treatment were observed in nine patients who received the drug in combination with sulfonamides from the beginning to the end of the treatment, between eight and nine and one-half months. Isoniazid combined with streptomycin was given to three patients for

three months. It failed. The combined treatment with isoniazid and sulfonamides for an additional period of seven months gave satisfactory results. The author concludes that isoniazid is of great therapeutic value in lepromatous leprosy. No other drug causes the bacilli in the nasal mucosa and in the skin to disappear so quickly or to diminish so rapidly. No other drug produces a clinical improvement in so short a period of time as isoniazid, alone or combined with sulfonamides.

A Study of Tinea Capitis W N C Fraser and A H Hackett, New Zealand M J 53 162-165 (April) 1954 [Wellington, New Zealand]

A survey of school children in the Auckland metropolitan area revealed that the incidence of tinea capitis is uncommon in the summer months, there being only one case found by Wood's filtered light in a sample of 500 children between the ages of 2 and 12 years. The virulence of ringworm appears to vary somewhat from person to person even though infected from the same animal, and such lesions under the same treatment take varying times to clear up. It appears that most infections are transmitted from animal to human beings, but only rarely and less often if precautions are taken. It has been proved to be transmitted from person to person. Living conditions appear to play little part in the transmission of infection, unless animals that may become infected and transmit infection to their human guardians are kept in the family. It appears that both good and poor homes are infected. In the opinion of these authors it is not necessary to keep the child from school, it appears that little or no infection is propagated among school children. Teachers and parents should be made aware of this fact, as valuable schooling is often lost when the child can least afford it.

Progressive Scleroderma and Its Roentgenologic Aspects. E Nagele and R Pfister Klin Wchnschr 32 452-455 (May) 1954 (In German) [Berlin, Germany]

Scleroderma appears in a diffuse or progressive form, a localized or circumscribed form, and as sclerema neonatorum. Nagele and Pfister observed eight cases of the diffuse progressive form. The skin changes begin with a doughy edematous swelling, which becomes transformed into an indurative and then into a sclerotic atrophic stage. The skin becomes tensely drawn, the face mask-like, and fingers and toes stiff and claw-like. The sclerotic changes involve not only the skin but various organs as well. Diffuse progressive scleroderma is a systemic disease. The cause has not been fully explained, but it is assumed that a central disturbance of the sympathetic regulation is the basic factor, which, by way of defective nervous,cretory, and circulatory functions, leads to metabolic changes in the connective tissue. Degeneration and dissolution of the elastic fibers is followed by their replacement with collagenous connective tissue. The increase in the thickness of the collagen fibers produces the peculiar hardening of the tissue. The intimal tissue of the small arteries and arterioles becomes saturated with coagulated protein and proliferate. Symptoms suggesting a relation to Raynaud's disease are frequent. Roentgenoscopy may reveal reticulation of both lungs, which is a fibrosis produced by an increase in connective tissue. The resulting dyspnea was formerly ascribed to induration of the skin and musculature of the thorax. The authors cite the case of a woman with severe dyspnea and moderate impairment of swallowing. The differential diagnosis proved difficult. Repeated searches for tubercle bacilli gave negative results. Boeck's sarcoid had been thought of on account of wing-like shadows in the lungs, but sclerodermal changes in the hand skeleton and particularly in the skin and the location of the pulmonary shadows in the lower lobes identified the disorder as scleroderma. In the heart, muscular tissue is replaced by fibrous scar tissue. Roentgenoscopy may reveal a normal heart, but frequently there is hypertrophy chiefly of the right side, most likely the result of pulmonary changes. The digestive tract is frequently involved, particularly the esophagus, in which muscle becomes replaced by connective tissue, and the mucous membrane may become involved secondarily. Difficulty in swallowing is observed in about 50% of the cases, and roentgenoscopy discloses retarded passage through the esophagus with atony and reduced peristalsis. Roentgenologic study of

stomach and intestine also discloses atony and reduced peristalsis. The most important roentgenologic changes of scleroderma are those in the bones. The patients with symptoms resembling Raynaud's disease often show osteolytic changes in the terminal phalanges of the fingers, as well as osteoporosis. Finally, there may appear the characteristic triad: volar flexion of fingers, progressive atrophy of the terminal phalanges, and calcium deposits in the finger tips. Calcium deposits are found also in other parts of the body.

UROLOGY

Peyronie's Disease. A New Approach. G. H. Teasley. *J Urol* 71:611-614 (May) 1954 [Baltimore]

Teasley discusses a new method of treating for Peyronie's disease (induration of corpora cavernosa), which he first reported in 1952 and which now has been tried in 24 cases. The skin is cleansed with soap and water and a disinfectant. The skin and subcutaneous tissue, down to and around the plaque, are infiltrated with 0.5% procaine solution. A solution of 25 mg of cortisone, dissolved in isotonic sodium chloride solution containing 0.25% of procaine crystals, is prepared. This will make approximately 1.25 to 1.5 cc. The solution is injected directly into the plaque. It is quite difficult to inject, and unless a Luer-Lok syringe is used the needle will be blown off the syringe. Injections are repeated at intervals of one week. The author used six injections before disappearance of the plaque. When the needle can be felt to scrape against the hard plaque and definitely enter its substance so that injection is particularly difficult, the results are best. Injection about the plaque will produce no complete resolution of the fibrous process. A moderate soreness between injections has been the only complaint. There is no reason to assume that any harmful systemic effect will be caused by cortisone in such a small dosage. Treatment can be repeated if symptoms return.

Renal Function After Complete Bilateral Ureteral Obstruction Following Colporrhaphy. B. R. Harrow. *Am J Surg* 87:842-850 (June) 1954 [New York]

Complete bilateral ureteral obstruction occurred a few months after vaginal hysterectomy and vaginal plastic operation in a 56-year-old woman with a recurrent third degree cystocele with a moderate vaginal collapse. After 12 hours of anuria cystoscopy did not reveal any ureteral outflow, and catheters could be inserted no more than 1 cm into both ureteral orifices. A 20% solution of methiodal (Skiodan) sodium that was injected through an occlusion catheter outlined sharp kinks of both lower ureters. The patient's only complaint was bilateral lower abdominal pain. After 72 hours without urine reaching the bladder, a right nephrostomy was performed resulting in drainage of 2,000 to 3,000 cc of urine during each of the next two days. The left ureter remained completely occluded. The patient improved rapidly. An intravenous pyelogram performed after 13 days with the right nephrostomy tube clamped demonstrated function in the completely blocked hydronephrotic left kidney. On the 23rd day the patient began to void large amounts of urine presumably from relief of the left ureteral blockage, since the right nephrostomy catheter continued to drain larger amounts of urine. The patient was discharged 36 days after the original plastic surgery, voiding all the urine with the nephrostomy tube constantly clamped. On the 47th postoperative day she was readmitted with fever, chills, left flank pain, and a nonfunctioning left kidney on intravenous pyelography. A left nephrostomy was performed. The nephrostomy tubes were removed on the 68th day, and the patient was discharged 74 days after the colporrhaphy with both wounds healed. Afterward the patient had no urinary symptoms and remained in good health. This report is on the 19th patient in the English literature with complete ureteral obstruction after gynecologic surgery. The patient also represents the fourth such occurrence after an anterior colporrhaphy. It is the fourth proved case of complete ureteral obstruction due to kinking and is the only reported case in which roentgenograms demonstrated the kinks. The most interesting

information obtained was that visualization of iodide occurred in a kidney completely obstructed for 13 days; follow-up urograms after four months revealed a normal pyelogram. From a discussion of the experimental and clinical data of renal function and the low secretory pressure continuing in hydronephrosis during complete obstruction, the conclusion was drawn that the main mechanism is glomerular filtration and pelvic and calyceal urothelium reabsorption. The author's case emphasized that kinking alone can produce a complete obstruction that may last for several weeks and thus requires early surgical intervention to relieve the anuria. The rapidity of the hydronephrosis and hydroureter with complete occlusion, the limited extent of the hydronephrosis, the slow reabsorption from the lower segment of the ureter and the lack of flank pain were all demonstrated in the author's patient. The use of the occlusion catheter is invaluable in making an accurate diagnosis in bilateral ureteral obstruction. Bilateral nephrostomy or intubated ureterostomy, rather than deligation, is recommended as the treatment of choice even after vaginal surgery. Insertion of ureteral catheters in secondary colporrhaphy or in anticipated difficult abdominal surgery is strongly advised as a preventive measure.

Alkalosis as Cause of Prerenal Azotemia. Review of Literature with Five Case Reports. M. K. Dill and A. B. Richter. *J Indiana M A* 47:494-502 (May) 1954 [Indianapolis]

When nitrogen retention occurs in kidney failure due to disease processes elsewhere in the body, it is referred to as prerenal azotemia. This does not mean that the kidneys are entirely normal. Prerenal azotemia indicates that the primary disease is outside the kidneys. This disorder causes functional or even structural changes in the kidneys with renal impairment. Prerenal azotemia is common in prolonged vomiting, as in intestinal obstruction and pernicious vomiting of pregnancy, severe prolonged diarrhea, acute infections, congestive heart failure, diabetic coma, Addisonian crisis, alkalosis, and shock. This paper deals with alkalosis as a cause of prerenal azotemia. Five cases of renal impairment or prerenal azotemia caused by alkalosis are presented. Alkalosis may result from the intensive or injudicious oral use of alkalis, such as sodium bicarbonate and calcium carbonate, from vomiting, as in high intestinal obstruction, and from removal of chloride by continuous gastric aspiration. Impairment of renal function with azotemia, creatinemia, hyponatremia, hypopotassemia, hypochloremia, lowered renal function tests, etc., often occurs. This renal impairment is reversible if the alkalosis is promptly treated with infusions of saline solution. Potassium chloride may be necessary. If it is not corrected in severe cases, death may result. The theories advanced in the literature with regard to the cause of renal impairment are reviewed. The authors stress the need for alertness with regard to this serious condition; they feel that it should be often emphasized in clinical medicine.

Cancer of the Prostate. C. E. Burford and E. H. Burford. *Missouri Med* 51:443-445 (June) 1954 [St. Louis]

Four hundred eighty men between the ages of 40 and 96 with carcinoma of the prostate were admitted to the department of urology of the St. Louis University School of Medicine. One hundred fifty-five were treated before 1941, i.e., before the neutralizing effect of estrogen was discovered, and 325 were treated after 1941. The operative mortality for the entire series of 480 patients was 2.5%. Of the 155 patients, 82 were operated on without positive pathological findings on palpation, and 73 with positive findings. Eleven (13%) survived for 5 years, 6 (7%) survived for 10 years, and 4 died within 6 weeks after the operation (an operative mortality rate of 5%). Of the 73 (32%) survived for 5 years, 3 (4%) for 10 years and 3 died within 6 weeks after the operation (an operative mortality rate of 4%). Of the 325 patients in whom surgical procedures were employed combined with the use of estrogen, 175 did not have positive pathological findings on palpation and 150 did with metastases in 38 (25%). Of the 175, 124 (71%) survived for 5 years, 42 (24%) survived for 10 years, and only 1 died within 6 weeks after the surgical intervention (an operative mortality rate of 1%). Of the 150 patients, 90 (60%) survived for 5 years,

29 (19%) survived for 10 years, and 3 (2%) died within 6 weeks after the surgical intervention (an operative mortality rate of 2%). Endocrine therapy has completely changed the treatment of carcinoma of the prostate. Patients with carcinoma of the prostate, regardless of the delay in diagnosis, can be relieved of symptoms with greater safety. Routine rectal examinations at least annually of all men aged 40 years or older offers the best chance for early diagnosis and prolonged survival. Even in advanced cases, a 60% five year survival rate may be anticipated. Testicular evisceration combined with administration of estrogen is the best method of management of carcinoma of the prostate, it offers a 33% 10 year survival rate.

THERAPEUTICS

Trial Treatment of Hodgkin's Disease with Actinomycin
Bertrand-Fontaine, J. Mallarmé, J. Schneider and J. Debray
Presse méd 62 737-738 (May 15) 1954 (In French) [Paris, France]

Results obtained by the use of actinomycin C in 15 patients (8 of whom were women) with histologically proved Hodgkin's disease treated at the Hôpital Beaujon-Cléry in Paris convinced those in charge of the experiments that the action of this preparation is clearly inferior to that of the established methods of treatment. The drug, dissolved in water, was first given intravenously in doses increasing gradually from 50 mcg to 400 mcg daily, later, the starting dose consisted of 200 mcg daily and the maximum dose of 400 mcg was attained more rapidly. The total dosages given were 12,000 mcg in three patients, 8,000 to 9,000 mcg in five patients, 7,000 to 8,000 mcg in two patients, 5,000 to 6,000 mcg in two patients, 3,500, 2,600, and 1,100 mcg in one patient each. Treatment of the last three patients could not be continued because of serious complications (not necessarily connected with the medication). No parallelism could be found between the size of the total dose given and the results obtained, improvement, when it occurred, always appeared at the beginning of the treatment (during the first week) and was not increased by its prolongation. Anorexia, nausea, abdominal pains, and involvement of the mucous membrane (e.g., stomatitis and pharyngitis) were among the side-effects produced by the drug, which on the whole was poorly tolerated, although no serious accident seemed to be directly attributable to it. Rapid but temporary regression of superficial lymph node swelling was secured in one patient with recent, previously untreated disease, and two others were slightly improved, but in the rest the treatment was without effect. Progressive deterioration resulted in the death of five patients. Puncture biopsy, performed during and after treatment in four, failed to show that actinomycin had any cytotoxic effect. Other therapeutic measures, such as radiotherapy, nitrogen mustard, and cortisone, whether used before or after actinomycin, produced unquestionably better results, both locally and generally.

Manifestations of Phagocytosis in Cases of Allergy to Drugs
L. Meyler *Nederl tijdschr geneesk* 98.1137-1143 (April 24) 1954 (In Dutch) [Amsterdam, Netherlands]

Meyler comments on the LE cell in lupus erythematosus, mentioning the factors that Hargraves had listed as essential for the appearance of the LE cell. While Hargraves and various other investigators believed that the LE cell occurred only in lupus erythematosus, others believed that this cell was found also in other conditions, such as moniliasis and serum disease. Meyler searched for LE cells in patients with drug allergy. Although he found no LE cells, he observed a manifestation that somewhat resembles the LE cell phenomenon, that is, he observed phagocytizing segment-nuclear leukocytes. He cites histories of nine patients in whom allergy developed in response to various drugs, including sulfonamides, arspenamine, iodine, methylthiouracil, butylethylmalonyl urea (Soneryl), and Peru balsam. The phagocytes were found in the peripheral blood as well as in the bone marrow. The phagocytic cells were mostly leukocytes with segmented nuclei. The phagocytized material consisted of lymphocytes, rarely of

leukocytes, and apparently also of thrombocytes and erythrocytes. In several cases both forms of phagocytosis were found in the same patient.

First Results in 12 Cases of Hodgkin's Disease Treated with Actinomycin C
R. Martin and J-P. Munier
Presse méd 62 741-742 (May 15) 1954 (In French) [Paris, France]

Treatment with actinomycin C in 12 patients with demonstrated Hodgkin's disease, most in an advanced and some in a terminal stage of their illness, proved disappointing, 2 of the patients died and only 4 are still in fairly satisfactory condition. Diminution in the size of the enlarged lymph nodes, seen in a few cases, was temporary in character and was apparently due more to the effect of the drug on the surrounding tissues than to its effect on the lymph nodes themselves. In only one instance was it accompanied by a reduction in fever and improvement in the patient's general condition. The treatment was usually well tolerated in the doses given, which consisted of 100 mcg daily, increased gradually to a maximum of 250 mcg daily (total dosage at first, from 5,000 to 6,000 mcg, later, 7,000 mcg and even in one case 9,300 mcg). The side effects were slight, consisting chiefly of dizziness and nausea when the daily dosage was increased from 150 to 200 mcg, occasionally, the injection of the drug was followed by a feeling of general malaise with weakness in the legs. These symptoms regressed within a few days. Icterus appeared in one patient two weeks after cessation of the treatment. Various other forms of therapy, notably cortisone, nitrogen mustard, and x-rays, were tried in some cases with results that, though also temporary, were generally better than those obtained with actinomycin.

The Present Position of Ultrasonics
A. W. Bauer
Brit J Phys Med 17 97-102 (May) 1954 [London, England]

Bauer feels that much of the literature of recent years on ultrasonics is concerned with the needless repetition of experiments on small animals with dosages that nobody would think of employing in the treatment of human beings. Great advances have been made in the construction of apparatus. The use of large dosages (more than 3 watts per square centimeter) has been discontinued. There has also been agreement on the use of a frequency of 1,000 kilocycles. The development of the pulsed ultrasonic application has been responsible for great progress. With this method the ultrasonic energy is not applied continuously but in short-term impulses. If, for example, the duration of the impulses, which are repeated 100 times in each second, is limited to one-tenth, we speak about a contact ratio of 1/10, the ratio being that of the duration of the impulse to that of the interval. The heat generated in the course of continuous sonation is almost entirely eliminated by the use of pulsed sonation. The mechanical component of the ultrasonic waves, however, remains active, and the reaction is as if the tissues had been exposed to an uninterrupted mechanical action. Effects due to heat appear either in a very mild form or not at all. Evaluating different views on the mode of action of ultrasonics, Bauer directs attention to the predominant importance of the neural factor. The diseases on which ultrasonics exert a favorable action are chiefly those in which the neural factor is of great importance. The results of ultrasonic therapy are discussed on the basis of a questionnaire inquiry made by Stuhlfauth and Woeber in 1953. This questionnaire provided information on the results obtained in more than 100,000 cases. The table that classifies the therapeutic results in percentage figures of very good, good, no or slight effects, and worsening also shows that 28 different entities were treated. The best results were obtained in lumbago, myalgia, contusions, distortions, inflammations of the skin, sciatica, periarthritis, arthritis, and tendovaginitis. Even among patients with Raynaud's disease, epicondylitis (tennis elbow), Sudeck's dystrophy, and Buerger's disease, the combined percentage of very good and good results was between 60 and 70. The author concludes that when used according to proper indications and suitable technique, ultrasonic therapy is effective and free from danger.

Collagen Disease. Scleroderma and Its Treatment with ACTH and Cortisone G Maraño and J Gimena *Ann endocrinol* 15 106-115 (No 2) 1954 (In French) [Paris, France]

Fibrinoid degeneration of collagen, the protein constituent of the connective tissue, is the primary and basic lesion found in all the so-called collagen diseases. This degeneration takes place chiefly in the median and intimal coats of the precapillary arteriole and is followed by lymphocytic and fibrocytic proliferation. The connective tissue reaction may be so intense as to cause diminution or even occlusion of the vascular lumen, thus producing ischemia and even at times osseous atrophy of the kind often seen in scleroderma with sclerodactylia. The cause of the disturbance is unknown, but allergy and hormonal factors are believed to play an important part in its production, and the possibility that other factors, such as infections and toxins of various kinds, may be partly responsible cannot be overlooked. A clear understanding of the relationship between the collagen diseases and the hypophyseal adrenal system has not yet been arrived at, but corticotropin (ACTH) and cortisone have proved more or less effective in their treatment, producing clinical remissions and even in some cases modifying the underlying histological manifestations of the condition. These effects, however, are usually temporary and cease when the medication is withdrawn. Administration of minimal doses, first of corticotropin and later of cortisone, to two patients in advanced stages of scleroderma with sclerodactylia resulted in improvement that was still evident two months after the cessation of treatment. The first patient, who had associated Raynaud's disease and osteolysis, began to improve within a few days after treatment was started, her movements became easier and more extensive, the flexibility of her skin increased, and she gained weight. Total dosage in her case consisted of 360 mg of corticotropin given in one 10 mg injection daily, followed by 950 mg of cortisone (25 mg daily). The second patient, who had respiratory system and esophageal involvement and rheumatoid arthritis, received a total of 80 mg of corticotropin in daily doses of 10 mg, followed by 925 mg of cortisone in daily doses of 25 mg. Improvement in her case was less than in the first, undoubtedly because the sclerosis was more advanced and because her hands presented severe sclerotic and arthritic deformity. No signs of hormone intolerance were seen in either patient.

Biological Bases for Interrupted Isoniazid Therapy M Reale, M Garaventa and M Ghione *Internista med.* 45 801-805 (March 21) 1954 (In Italian) [Turin, Italy]

The incidence and early emergence of isoniazid-resistant strains of tubercle bacilli may be related to the rhythm of administration of the drug. The authors made *in vitro* studies to determine the bacteriostatic effect of a temporary contact of the tubercle bacillus with the drug. From 3 to 5 mg of isoniazid per kilogram of body weight was given to the patient with tuberculosis who had not received antibacterial therapy for two days. One hour later, 10 cc of blood was withdrawn, and, after a few crystals of sodium citrate were added, it was diluted with an equal amount of distilled water. This solution was then put into four test tubes in which plates with smears of sputum of the same patient prepared the day before were immersed. They were then put in a thermostatically controlled environment at 37 C (98.6 F) for two hours, after which the plates were removed, washed with sterilized isotonic sodium chloride solution, put in test tubes containing Youmans culture and placed in the thermostatically controlled environment at 37 C. Readings were made at intervals of 24, 48, 72, and 96 hours. They revealed a 72 hour inhibition of the development of bacterial strains sensitive to isoniazid. This test was made on 19 tuberculous patients. The findings suggested that interrupted administration of isoniazid every three days may, in addition to producing a therapeutic action, defer or prevent the emergence of resistant strains and bring about a more effective and more lasting tolerance to the drug. The authors suggest the following regimen for the treatment of tuberculous patients: a single dose of isoniazid (3 to 5 mg per kilogram of body weight) every three days, 12 gm of *p*-aminosalicylic acid in two or three doses the following day, and injection of 1 gm of streptomycin in a single dose the third day. With this method the total dose of each drug is reduced to one third without attenuating the curative effect.

Rheumatic Fever Prophylaxis: Control of Streptococcal Upper Respiratory Infection in Cardiac and Rheumatic Fever Patients and Their Siblings; Preliminary Report. R. A Tidwell *North-west Med.* 53 470-476 (May) 1954 [Seattle]

All persons with active streptococcal infections of the upper respiratory tract are possible future victims of rheumatic fever. Others, who are symptom free but whose throat cultures are either persistently or intermittently positive for streptococci, may, as carriers, endanger the health of those with whom they come in contact, especially in school and family groups. The effectiveness of a comparatively inexpensive, long-term prophylactic program for control of streptococcal infection of the upper respiratory tract in patients with rheumatic or cardiac disease and their family contacts was studied in a group of 59 subjects consisting of 31 grade school children, 26 preschool children (many of whom were siblings of those in school), and 2 adults (mothers of children in the group). The series included 11 families and 29 separate children. One 200,000 unit tablet of benzathine penicillin G (Bicillin), a tasteless long-acting salt of penicillin, was given to each of 58 patients daily, before, after, or between meals, to be swallowed whole with water, chewed, or crushed and taken with food. Two tablets daily were required to control the infection in the remaining patient. All persons took the medication willingly, and its effectiveness in eliminating the beta hemolytic streptococcus was apparently not influenced by either the time or the manner of administration. No evidence of sensitivity to penicillin or of drug resistance was seen in any of the patients during the trial period of from 3 to 10 months. Acute or chronic illnesses present in 25 patients at the start of the prophylactic program included congenital heart disease, 8, rheumatic fever, 13, nephritis, 2, asthma, 1, and streptococcal pharyngitis, 1. The increase in general health as reflected in improved school attendance was remarkable, even in the children with cardiac malformations. No early or late suppurative or nonsuppurative sequelae followed any of the various intercurrent infections experienced by the patients and in none of those who were ill at the start of the program was there any evidence of recurrent rheumatic fever or bacterial endocarditis or any aggravation of renal disease or asthma. Throat cultures taken at monthly intervals or oftener during the period of treatment remained consistently negative for beta hemolytic streptococci, except in one case in which the organism reappeared temporarily when medication was interrupted and in another in which control was secured by doubling the dose. Long-term prophylaxis with benzathine penicillin G can therefore, be regarded as an economical and effective method of controlling streptococcal infection of the upper respiratory tract.

Local Ambulatory Treatment of Chronic Leg Ulcers with Hyaluronidase, Plasminogen, and Antibiotics I R Spier and E E. Clifton. *Surg., Gynec & Obst* 98 667-674 (June) 1954 [Chicago]

Sixteen patients with chronic leg ulcers, who previously had been treated by routine methods for long periods of time without success, were treated by Spier and Clifton with a combination of enzymes and antibiotics. Many of these patients had received surgical treatment. All had good arterial pulses in their feet. Fifteen were treated entirely as outpatients, and the remaining patient was an inpatient who was being prepared for skin grafting. These lesions were regarded primarily as the result of stasis changes; therefore, surgery and all measures capable of reducing this stasis such as elevation, diet and elastic bandages were utilized. The general management was not changed. The involved area was first washed with a detergent cream composed of sulfonated ether petroleum lactic acid and wool fat cholesterol with 3% hexachlorophene solution added (pHisoHex). Then, instead of applying the scarlet red gentian violet, hydrophilic nitrofurazone (Furacin) or other ointments plasminogen or hyaluronidase with or without antibiotics was used. Treatment of the wound was completed with a sterile dressing and an Ace bandage. The first patients were treated with liquid preparations in the outpatient department five days a week for an initial period and thereafter three times a week. The enzyme and antibiotic in solution were placed on the ulcer for 30 minutes. Then a gauze pad saturated with the solution was applied over the ulcer and held in place with a strip of petro-

latum gauze, dry sterile dressings, and Ace bandage. At the outset of this study, alternate cases were treated with plasminogen, plasminogen plus oxytetracycline (Terramycin), hyaluronidase, and hyaluronidase plus oxytetracycline. After the initial period, the routine of dressings was hyaluronidase with or without oxytetracycline, three times a week. The last six patients were given the medicaments in a water soluble base to take home. This ointment was to be kept refrigerated and applied daily at home. These patients were seen weekly. For the first week the ointment they received contained plasminogen, with bacitracin in four instances and with oxytetracycline in two. Subsequently, hyaluronidase with the antibiotic in ointment was used for the next one or more weeks until the cellulitis cleared, and then hyaluronidase in ointment alone was applied. This procedure proved successful in many cases in which the customary methods had failed.

Anaphylaxis Due to Topical Penicillin E S Carter Jr and C B Cope *J Allergy* 25:270-271 (May) 1954 [St Louis]

A 44-year-old nurse while receiving a heavy metal treatment for congenital syphilis in 1943, had a generalized pruritic rash that disappeared after cessation of treatment. In July, 1946, because of a persistently positive serologic test for syphilis, she received 4,800,000 units of penicillin over a 15 day period without side-effects. In February, 1953, she was given an injection of penicillin for bronchitis, and she noted tightness in the chest and wheezing. Two days later a rash appeared, and, although a provisional diagnosis of measles was made, no other stigmas of that disease developed. On May 26, 1953, she noted slight burning and redness of the right eye. She applied some penicillin ophthalmic ointment. This was quickly followed by shortness of breath, a flushed appearance, cramping abdominal pain, and the passage of flatus and a large watery stool. Asthmatic wheezes were audible throughout both lung fields. The blood pressure was 70/50 mm Hg. Within 10 minutes of the onset of this reaction she was given epinephrine, phenobarbital (Luminal), atropine sulfate and tripelethamine (Pyribenzamine) and responded favorably. A patch test with penicillin ophthalmic ointment several months later, produced a pruritic, erythematous wheal 1.5 cm in diameter with several small pseudopodia. The authors feel that if the skin rash, which developed after the second exposure to parenteral administration of penicillin, had been evaluated in its true light and its importance impressed on the patient, she would have been spared the last severe experience. It has been proposed that a patient having survived an anaphylactic reaction be provided with identification to the effect that penicillin not be administered under any circumstances. The ease with which alarming reactions are precipitated by seemingly insignificant doses of penicillin is most distressing, and it is not impossible that injudicious skin testing itself may provoke a severe or perhaps even fatal reaction.

Local Haemorrhage and Necrosis of the Skin and Underlying Tissues During Anti-Coagulant Therapy with Dicumarol or Dicumacyl H Verhagen *Acta med scandinav* 148:453-467 (No. 6) 1954 (In English) [Stockholm, Sweden]

Thirteen cases are reported of an unusual complication occurring after the administration of bishydroxycoumarin (Dicumarol) or ethyl biscoumacetate (Dicumacyl), they are believed by the author to be caused exclusively by these drugs. The pattern of occurrence was fairly regular. Thrombosis developed in a patient, usually a woman, often after parturition or surgery. Therapy with one of the two drugs was instituted, and, on the fifth or sixth day of treatment, a large hemorrhage suddenly developed in the skin, with a hemorrhagic infiltration of the skin and subcutaneous tissues that was extremely painful and was surrounded by a hyperemic reactive zone. A few days later the infiltrated tissues became necrotic, with hemorrhagic blisters. During the next weeks these necrotic tissues demarcated, leaving a deep ulceration. Finally this ulcer healed, leaving an extensive scar. The lesion was localized to the buttock in five of the patients, the thigh in four, the lower leg in two, the penis in one,

and the mammary gland in one. Once a hemorrhage had appeared, the continued administration of bishydroxycoumarin or ethyl biscoumacetate as anticoagulants had no adverse effect on the lesion. The patients received routine wound treatment, and three had skin grafts.

Eight Fatal Anaphylactic Reactions to Penicillin A. Rosenthal *New York J Med* 54:1485-1487 (May 15) 1954 [New York]

In the course of an investigation of sudden deaths conducted by the Office of the Chief Medical Examiner of the City of New York, eight instances of sudden death following the injection of penicillin were found. At autopsy, which was performed in all but two of the cases, a search was made at the site of injection to determine whether any of the drug had entered the blood stream. In none of the cases was there any penetration of a vessel by the needle used to inject the penicillin. A review of the types of penicillin used in these cases and of other penicillin reactions, not necessarily fatal, led to the conclusion that it was not one type of penicillin, nor even the procaine radical incorporated in the penicillin, but rather the penicillin itself that was the sensitizing agent and thus the responsible agent for subsequent reactions. Reports of fatal and nearly fatal reactions to penicillin are rapidly increasing and demonstrate the ever-mounting importance of the problem of penicillin sensitivity. Discrimination must be exercised in the use of this drug. There is indiscriminate application of all antibiotics, but, since penicillin was available before the others, the opportunity for its more widespread use and consequent production of sensitization was much greater. That reactions to penicillin occur after use by other than the injection-route is now an established fact. Penicillin should not be given parenterally without first asking whether the patient had ever experienced an eruption, rash, swollen joints, shortness of breath, or blotching of the skin following the use of penicillin. A positive answer or even a suggestive positive answer to such questioning should contraindicate the use of penicillin in any form. The presence of asthmatic symptoms at a time when the use of penicillin is contemplated should also serve as a contraindication to its use. Inquiry regarding previous reactions and the restriction of the use of penicillin to necessary instances will tend to prevent the tragedies exemplified in the eight reported cases.

Complications of Anticoagulant Therapy: Review of the Literature and Report of Case R C Raimie *New England J Med* 250:810-812 (May 13) 1954 [Boston]

The anticoagulants are recognized as an important addition to the therapeutic armamentarium of thromboembolic disease. Although hemorrhage is the only known complication, there are numerous contraindications: blood dyscrasias manifesting hemorrhagic tendencies, large open surfaces with poorly controlled hemostasis after operation, surgery of the brain and spinal cord, active or imminent gastrointestinal ulceration or bleeding, malignant hypertension, particularly when there has been a previous cerebral hemorrhage, and subacute bacterial endocarditis. The most important contraindication—the lack of adequate laboratory facilities—may have disastrous results. The incompatibility of lumbar sympathetic blocks and other deep needle-puncture procedures and anticoagulant therapy has been stressed in several reports. Hemorrhage into the spinal cord has been observed as a result of a diagnostic lumbar puncture. A patient with a fractured hip was given anticoagulants two weeks after operation, with resultant extensive ecchymosis at the site of the pinning. Questionnaire inquiries revealed many unreported cases of hemorrhagic complications occurring during the use of anticoagulants. In a review of 107 cases of fatal drug poisoning, it was found that bishydroxycoumarin (Dicumarol) was the commonest cause of deaths resulting from drugs given orally. The author presents the history of a patient with thrombophlebitis that demonstrates the potential hazards of the anticoagulant drugs. It is reemphasized that a reliable laboratory and a competent physician are essential for correct use of these drugs. Direct effects of the anticoagulants on the vascular wall have not been determined, and individual idiosyncrasies cannot be predicted.

Potentially Dangerous Group O Blood J M Gardner and G H Tovey *Lancet* 1 1001-1004 (May 15) 1954 [London, England]

Patients with blood belonging to groups A, B, or AB must often be given emergency transfusions of group O blood, although, whenever such transfusions are given, there is a possibility that the transfused anti-A or anti B antibodies from the group O plasma may react with the recipient's A or B red blood cell antigens to cause a hemolytic transfusion reaction. Investigation showed that most of the group O bloods containing a significant concentration of immune anti-A or anti B antibodies can be detected by a simple screening test for anti A and anti-B hemolysins. The test, which is an extension of the routine test for anti A and anti B saline agglutinins used by all major blood banks, can be performed with very little extra work and without any additional materials. Application of the test to samples of serum from 1,960 group O blood donors selected at random showed that 185 contained strong anti-A or anti-B hemolysins. Strong hemolysins are those that produce from 50% to complete hemolysis. Clinical and experimental investigations have not yet determined whether the dangerous component of group O blood is the hemolysin or the immune agglutinin, but apparently if group O bloods containing immune anti-A agglutinins in a titer greater than 1 in 16 can be eliminated, no untoward reaction to immune agglutinins need be feared. Investigation of this factor showed that while immune anti A agglutinins in a titer greater than 1 in 16 were present in 10% of the group O serums containing strong anti A hemolysins, no immune agglutinins in this concentration were found in 772 group O serums from which strong hemolysins were absent. Adoption of this simple test for hemolysins as a routine screening procedure for group O donors may be expected to ensure the transfusion of group O bloods containing hemolysins or immune agglutinins (anti-A or anti-B) in high concentration only to patients known to belong to group O.

Urinary Excretion of Adrenocortical Steroids by Patients Receiving Salicylates M J H Smith, C H Gray and J B Lunn *Lancet* 1 1008-1009 (May 15) 1954 [London, England]

The urinary excretion of adrenocortical steroids in patients receiving salicylates was investigated by a paper chromatographic method that permitted separate estimation of compound E, compound F, and tetrahydrocortisone. Three of the patients had rheumatic fever, and two had rheumatoid arthritis. All were given sodium salicylate at 4 hour intervals (total daily dosage, 150 to 200 grains [9 to 12 gm]), in addition, the two patients with rheumatoid arthritis subsequently received 40 units of corticotropin (Acthar gel) on two successive days. The results showed that, when the salicylates were being given, the urinary excretion of adrenocortical steroids did not exceed the normal range and that, when administration of the salicylates was stopped, there was no decrease in the excretion of the steroids. Subsequent administration of corticotropin to the patients with rheumatoid arthritis, however, was followed by a considerable increase. These findings indicate that, while there are certain similarities in the metabolic and clinical effects of salicylates and of corticotropin and cortisone, the hypothesis that the therapeutic activity of salicylates is mediated by the anterior lobe of the pituitary and the adrenal cortex is untenable.

PATHOLOGY

Relationship Between Mediastinal Lipomas and the Thymus M Rubin and S Mishkin *J Thoracic Surg* 27 494-502 (May) 1954 [St. Louis]

The 19 year-old woman reported on by Rubin and Mishkin was admitted in labor to Morrisania City Hospital. A chest roentgenogram revealed a large mass in the anterior mediastinum to the right of the heart. The patient was discharged after delivery and advised to return after convalescence. On readmission, two months later, the patient stated that shortness of breath had increased in severity. Except for dullness and diminished breath sounds over the right side of the chest anteriorly, no other physical abnormalities were found. Angiocardio-graphic studies showed the mass to be unrelated to the

heart and great vessels. The radiographic appearance of the tumor suggested a mediastinal lipoma. The tumor was removed and was found to contain thymic and fatty tissue. The possibility suggested itself that mediastinal lipomas may originate in the thymus, as a result of the infiltration of the organ with fat during its involution. A review of the literature of so-called lipothymomas (the tumor encountered in the patient in question was representative of this type) and lipomas of the mediastinum gave support for this hypothesis. It was noted that, with few exceptions, intrathoracic lipomas are located in the anterior mediastinum in front of the heart and great vessels. Many of the large lipomas, exceeding the bounds of the mediastinal compartment, were connected by a pedicle or a projection of tissue with the thymic area. Benign mediastinal tumors consisting of an admixture of thymic and adipose tissue are comparatively rare. They are found in children between the ages of 10 and 15 years. The authors assume that the mass in their patient was present when a so-called enlarged heart was found in the roentgen examination of the chest at the age of 14 years. Such tumors may simulate cardiac enlargement. The authors attempt to reconstruct the possible evolution of lipomas or lipothymomas, pointing out among other factors that, if such a tumor is discovered early in life, both thymus and fatty elements may be found, but that, if involution has taken place, fatty tissue predominates.

Thymic Cysts: Review of the Literature and Report of Two Cases. W G Krech, C F Storey and W C Umiker *J Thoracic Surg* 27 477-493 (May) 1954 [St. Louis]

Krech and associates report on two men, aged 21 and 26, respectively, in whom thymic cysts appeared as anterior mediastinal masses in roentgenograms. The growths were recognized as thymic cysts on histological examination after excision at thoracotomy. Eight additional thymic cysts excised through a cervical incision or at thoracotomy, or both, were tabulated from the literature. The authors believe that thymic cysts may be divided into three groups: (1) congenital, (2) inflammatory, and (3) neoplastic. The non-neoplastic, noninflammatory cysts of the thymus observed in the two patients reported on here are probably congenital in origin. A congenital defect may have been present in the form of a patent thymic or thymopharyngeal duct persisting until such time as fluid or hemorrhagic distention occurred. Why this happens is not known. Cysts resulting from infection appear to be due to syphilis. Although rather common in the past, thymic cysts of this kind are now rarely observed. Cysts occurring in thymic neoplasms can probably be attributed to degeneration and necrosis of the tumor. The preoperative diagnosis of a thymic cyst is presumptive. Any cervical or anterior mediastinal mass may be found to be such a lesion. The presence of a mass that could be a cyst of the thymus is an indication for its complete excision. This is usually accomplished either through a cervical or thoracic approach, depending on the location of the mass. At times a combined approach may be required in order to remove a thymic cyst that lies partly in the neck and partly in the mediastinum. Thymic cysts may be unilocular or multilocular. The lining epithelium is characteristically cuboidal or pavement-type epithelium. In one of the two reported cases medullary and cortical thymic tissue elements, were immediately adjacent to this epithelial lining or separated from it by collagenous fibrous connective tissue of varying thickness. Hassall's corpuscles were present and most of them were calcified.

Biopsy of Kidney in Prone Position R M Kark and R C Muehrcke *Lancet* 1 1047-1049 (May 22) 1954 [London, England]

The authors have improved on Iversen's technique of kidney biopsy by placing the patient in the prone position. This is more comfortable for him, and it results in a greater number of successful biopsies. The authors obtained 48 specimens from their first 50 biopsies with Franklin's modification of the Vim Silverman needle. The two failures occurred in a grossly hydro-nephrotic kidney and in a small and very mobile kidney in a thin woman. Kidney biopsy is of great value in the clinical and pathological diagnosis of renal disease and should be employed in that field since it is a safe and relatively painless procedure.

RADIOLOGY

The Pulmonary Aspects of Polyarteritis (Periarteritis) Nodosa. H P Doub, B E Goodrich and J R Gish. *Am J Roentgenol* 71 785-793 (May) 1954 [Springfield, Ill.]

Of 15 male and 4 female patients between the ages of 2½ and 64 years with polyarteritis nodosa, who were studied between 1943 and 1952, 11 died. Postmortem examinations were done in nine. Seven of the eight remaining patients are living and without symptoms. Duration of life since diagnosis was made by biopsy was six years in three patients, four years in one, two years in two, and one is a current case. Pulmonary symptoms and roentgenologic abnormalities in these patients were neither frequent nor helpful in diagnosis. In the nine patients in whom necropsies were done, death occurred within eight months after the onset of symptoms. Eight patients died of progressive disease with no remissions, one was well for three years after diagnosis was made by biopsy and then died of an acute recurrence in eight weeks. There were observed pathological lesions of polyarteritis nodosa in all nine cases in one phase or another in a generalized distribution. Seven showed characteristic lesions in either the bronchial or pulmonary arteries, one in both. In all the fatal cases, the appearance was that of progressive chronic illness, with increasing pallor, weakness, and emaciation. All showed evidence of multiple systemic involvement. Those having extensive roentgenologic changes in the lungs were observed to have minimal and incompatible physical findings. Pulmonary symptoms were frequent and handicapping in the patients who died. Analysis of the roentgen changes in the six patients with evidence of pulmonary involvement disclosed the presence of parenchymatous infiltration in all. In two the familiar bat-wing areas of infiltration were demonstrated. Two showed moderately pronounced nodulation. These findings are not specific but may be suggestive. Major pulmonary symptoms or parenchymal roentgenologic abnormalities indicate a poor prognosis.

Roentgenographic Demonstration of Histologically Identifiable Renal Calcification. J D Mortensen, A H Baggenstoss, M H Power and D G Pugh. *Radiology* 62 703-712 (May) 1954 [Syracuse, N Y]

Postmortem roentgenographic examinations were made of kidneys from 210 patients in whom renal parenchymal calcification had been recognized histologically at the department of pathologic anatomy of the Mayo Clinic. Of the 210 kidneys that were found to contain microscopic evidence of calcification, 174 (82.8%) did not show radiopaque shadows of any type, in 30 (14.3%), radiopaque shadows were observed in isolated portions of the kidney or in localized pathological lesions involving the kidney. In only 6 (2.9%) were multiple diffuse parenchymal calcifications (nephrocalcinosis) demonstrated roentgenographically. An attempt was made to correlate the roentgenographic demonstrability of deposits of calcium with their histopathological features, chemically determined quantity, and associated causative disorders. The following conclusions appeared to be justified. Parenchymal calcification commonly exists in kidneys to a degree, extent, or type that is not discernible roentgenographically. In certain instances renal calcification that histologically is not readily distinguishable from that which cannot be demonstrated roentgenographically does cast characteristic and identifiable shadows on the roentgenogram. The cases in which the authors were able to demonstrate the presence of calcium deposits roentgenologically were associated with primary hyperparathyroidism, chronic pyelonephritis, and chronic glomerulonephritis as causative disorders. This group of cases did not include specimens of nephrocalcinosis caused by hyperchloremic acidosis, recurrent renal lithiasis, or hypercalciuria of undetermined cause, which comprise the only other causative disorders known to be

responsible for producing roentgenologically demonstrable nephrocalcinosis. The reasons why some renal parenchymal calcification is and some is not apparent roentgenographically are not clear and need further study. The quantitative chemical determinations in general indicate a higher content of calcium in those kidneys with roentgenologically demonstrable deposits. On the other hand, neither gross nor microscopic estimation of degree of renal calcification is indicative of its roentgen demonstrability. Roentgenography appears to be a practical method for separating a small group with a certain degree or type of calcification from the large group with microscopically demonstrable renal calcification. This small group has certain clinical implications that do not apply to other patients having renal calcification. The term "nephrocalcinosis" should be reserved for this type or degree of renal calcification that can be shown roentgenographically.

Irradiation Therapy in Hodgkin's Disease. C M Nice and K. W. Stenstrom. *Radiology* 62 641-653 (May) 1954 [Syracuse, N Y]

In irradiating patients with Hodgkin's disease, as well as with other malignant conditions, it is essential to attempt to utilize an optimum dosage within certain time limits. The treatment should be individualized. At the department of radiology, University of Minnesota Medical School, in general, when the disease was localized to one or a few regions, an attempt was made by the authors to deliver a minimum of 2,000 tissue roentgens to the tumor in 14 days. In the cervical region, this was accomplished by giving 900 r in air to each of three fields. The technical factors were tension of 220 kv, 0.55 mm Cu and 1 mm Al filtration, a half-value layer of 1.35 mm Cu, and 60 cm distance. Added filtration and increased distance to achieve better depth dose distribution were used for more deep-seated lesions. Large masses of long standing may require heavier dosage, but, even in the smaller masses, a minimum dose of 2,000 tissue roentgens is desirable. When there was massive involvement of the mediastinal nodes, small doses of 50 to 75 r in air were used initially to obviate possible edematous compression of the tracheobronchial tree. A total tumor dose of 2,000 tissue roentgens was still given within a period of three weeks. Total body or spray irradiation was occasionally given in very small doses to patients with widespread involvement. Of 208 patients with proved Hodgkin's disease followed up for five years or longer, 52 (25%) survived for five years. Of 173 patients followed up for 10 years or longer, 19 (11%) survived for 10 years. Clinical staging is considered as the most accurate aid in prognosis and is necessary in comparing series from various medical centers. Of the 208 patients, 20 were in stage 1 (involvement of only one lymph node region or a single lesion elsewhere, with no constitutional symptoms), 17 (85%) of the 20 patients survived for five years, 13 of these were followed for 10 years or longer, and 10 (77%) survived for 10 years. In stage 2 (involvement of two or more proximal lymph node regions confined to either upper or lower trunk, with or without constitutional symptoms), there was a 90% survival, i.e., 18 of 20 patients followed five years, and a 35% survival, i.e., 6 of 17 patients followed 10 years. Thus the difference between stages 1 and 2 was shown in the 10 year period. In the much larger group, stage 3, representing those patients with disseminated disease, the 5 and 10 year survival rates were 10% (17 of 168 patients) and 2% (3 of 143 patients) respectively. In stage 1, the treatment of choice is either intensive irradiation or, possibly, surgical excision followed immediately by intensive irradiation. In stage 2, intensive irradiation is the procedure of choice. In stage 3, less intense or palliative irradiation to reduce tumor masses or to relieve symptoms is indicated. It is in the latter group that the nitrogen mustards and triethylene melamine may serve as useful adjuncts.

BOOK REVIEWS

Improvement of Patient Care. A Study at Harper Hospital. By Marion J. Wright, R.N. M.S. Associate Director Harper Hospital Detroit. This book is published in cooperation with and under sponsorship of American Hospital Association. Cloth. \$5.50 Pp 236 with 4 illustrations. G. P. Putnam's Sons 210 Madison Ave. New York 16 1954

This volume presents a comprehensive study of patient care based on the view that each member of the hospital staff plays an important part in the hospitalization program. Careful studies were thus made in selected areas to determine the extent of hospital needs and the methods that might best be employed to increase the efficiency of hospital operation. Patients were interviewed, as well as members of the medical staff, nurses, and other professional and nonprofessional personnel. Data were likewise obtained with reference to types of patients admitted, degree of illness, average length of stay, occupancy rates, admission and discharge procedures, physicians' orders, number of treatments and medications, and other items. After basic data had been collected on the amount and kind of care required, the principles of industrial engineering were applied with work samplings in many areas to establish time schedules, new patterns of staffing, and more efficient procedures wherever indicated. While this study was related mainly to a selected hospital group, the information gathered and the results obtained should be of great value to any hospital. It is fortunate, therefore, that the author's report has been made available in book form.

Guide to Standards for Resident Camps for Crippled Children. Easter Seal publication no. E 11. Paper \$1.50 Pp 29 with illustrations. National Society for Crippled Children and Adults Inc. 11 S. La Salle St. Chicago 3 1954

This booklet, compiled for the use of those concerned with orthopedically handicapped children, sets forth standards in relation to (1) physical plant and equipment, (2) admission policies and procedures, (3) health and sanitation, (4) safety (5) administration (6) program, and (7) personnel of resident camps. In the appendix suggestions are given concerning the groups and individuals who may cooperate in a camping program for orthopedically handicapped children. The appendix also deals with the manner in which national, state, and local resources may be used in establishing and operating such a camp and with some of the legal and insurance problems in camps for crippled children. The detailed recommendations given for each of the categories mentioned are logically grouped under the various aspects of the camping situation within that division. For example, under health and sanitation, standards are suggested for medical examination of campers and staff, health precautions, food, and sanitation. This plan makes quick reference to a particular phase of camping possible and at the same time draws attention to the need for control of all the factors involved in the camping program.

The recommendations made go beyond what might be termed minimum standards, they include some that should be met immediately without qualification and others that are desirable goals but not essential to health and safety. No apparent differentiation is made between these two types of standards. While strong arguments can be offered against the presentation of minimum standards alone, it would seem that, since both types are included, some distinction would be helpful to those using the book. In certain instances the standards are less specific than some might wish to have them, however, reasonable flexibility to permit local adaptation within such standards is desirable. Guidance on specific provisions is available for the asking in most instances from appropriate national, state, and local agencies. This guide should be extremely helpful to those concerned with the operation, direction, and design of camps for handicapped children.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

French's Index of Differential Diagnosis. Edited by Arthur H. Douthwaite M.D. F.R.C.P. Senior Physician Guy's Hospital, London. Seventh edition. Cloth \$20.105s. Pp 1046 with 731 illustrations. Williams & Wilkins Company Mt. Royal and Guilford Aves., Baltimore 2 (John Wright & Sons Ltd 42-44 Triangle West, Bristol 8 England) 1954

It has been nine years since the last edition of this valuable textbook and five years since the death of French who before his death had already turned the editorship of his book over to his associate. Over half of the first edition published in 1912 was written by French himself, although none of the sections of the new edition bear his signature. The general plan of the book is unchanged. The book has been thoroughly revised and only 5 of the 18 contributors also contributed to the sixth edition. Unlike most revisions this one is slightly smaller than the last. Condensation has been accomplished despite the addition of much new material, by deleting that which has become obsolete by shortening some of the longer discussions, but chiefly by painstakingly eliminating overlapping in various sections. Even the index in the back has been shortened and simplified. The book is still profusely illustrated with black and white and colored plates. It remains what it has been for years, a most useful reference book for student and practitioner.

Methods of Biochemical Analysis. Volume I. Edited by David Gluck. Professor of Physiological Chemistry University of Minnesota. Minneapolis. Cloth \$9.50 Pp 521 with illustrations. Interscience Publishers Inc. 250 Fifth Ave. New York 1. Interscience Publishers Ltd 88-90 Chancery Lane London W.C.2 1954

Because annual reviews are so useful in the fields in which they are available, with this volume Dr. Gluck has started an annual review of methods of biochemical analysis. Comparatively few subjects are to be included in each volume, but each will be covered thoroughly by experts selected because they either 'originated the methods' or have had intimate personal experience with them. The topics covered in the first volume are zone electrophoresis (Kunkel) and determination of sulfhydryl groups (Chinard and Hellerman), phenolic compounds (Bray and Thorpe), antibiotics (Kersey and Fink) and vitamin B₁₂ (Hoff-Jørgensen) by microbiological methods, ascorbic, dehydroascorbic, and diketogulonic acids (Roe), adrenal steroids (Haines and Karnemaat) and radioactive iodine compounds from the thyroid gland and body fluids (Roche, Lissitzky, and Michel) by chromatography, choline (Engel, Salmon, and Ackerman), nucleic acids (Volkin and Cohn), raffinose and ketose in plants (Whalley and Gross), adenosine triphosphate and related products (Strehler and Totter), catalases and peroxidases (Maehly and Chance), hyaluronidase in vitro (Tolkdorf), serum lipoproteins by ultracentrifugal analysis (de Lalla and Gofman) and urinary neutral 17-ketosteroids (Engel). The subject index seems adequate, but there is no author index, probably because the references in the bibliographies at the end of each chapter are arranged alphabetically by author. The printing and binding are good. The series ought to be extremely useful.

Wine as Food and Medicine. By Salvatore P. Lucia, A.B. M.D. Sc.D. Professor of Medicine University of California School of Medicine San Francisco. Cloth. \$3 Pp 1-9. Blakiston Company (division of Doubleday & Company Inc.) 575 Madison Ave. New York 22, 1954

This book deals with wine as a food and medicine covering such aspects as the chemistry of wine, its action on the gastrointestinal, respiratory, cardiovascular and neuromuscular systems, its use in acute infectious diseases in diabetes mellitus and in the treatment of the aged and the convalescent and its employment as a vehicle for medication. The interested reader will find numerous useful references.

QUERIES AND MINOR NOTES

ROUTINE USE OF PENICILLIN

TO THE EDITOR—*I am impressed by the article "Eight Fatal Anaphylactic Reactions to Penicillin" by Dr. Abraham Rosenthal (New York J Med 54 1485 [May 15] 1954). Facing the threat of penicillin anaphylaxis, it seems to me that the general practitioner will have to revise his antibiotic therapy. I would appreciate an up-to-date outline of antibiotic therapy for the general practitioner, who must make his decision at his office or at the bedside without sensitivity test of causative organisms. Should penicillin therapy, orally and parenterally, be abandoned? Should the antisyphilitic treatment with 9 million units in the average case be changed?* M. D., New York

ANSWER—In the past few years there has been an increase in the number of fatal reactions following the administration of penicillin. The incidence of anaphylactic-like reactions is still extremely low when one considers its wide use. Over 300 tons of penicillin were used domestically in 1953. A complete revision of the general practitioner's use of antibiotic drugs is not warranted on the basis of the above report, but patients should be questioned concerning previous reactions to penicillin. If any reactions have occurred, the use of penicillin should be carefully weighed, keeping in mind that, for many infections, other antibiotics are available. Patients who have a previous history of allergy to foods, drugs, bacteria, or pollens may be skin-tested intradermally if it is decided that penicillin is the drug of choice. Such tests are not infallible, but the patients who are extremely sensitive to penicillin are the most likely to show a positive wheal at the site of the intradermal test. If it is decided to use penicillin in spite of past allergic history, the physician must have epinephrine and antihistaminics available for immediate injection if necessary.

Penicillin is still the drug of choice in many infections, and its use should not be abandoned. The oral administration of this drug is less apt to produce fatal anaphylactic reaction than its parenteral use. Accordingly, at the bedside, where skin tests may not be practical, tablets and suspensions of penicillin may be substituted for injections. Since anaphylactic reaction in some patients appears to be related to inadvertent intravenous administration, the physician should never fail to attempt aspiration before injection of penicillin to make certain that the lumen of the needle is not within a blood vessel. Penicillin is the drug of choice in the treatment of syphilis, and dosage schedules for various stages of this disease are given by Curtis and others (*J A M A* 145 1223 [April 21] 1951).

XANTHOPHIA FOLLOWING SNAKE BITE

TO THE EDITOR—*Have you any record of a snake-bite victim complaining of yellow vision?*

S. B. Forbes, M.D., Tampa, Fla.

ANSWER—In xanthopia the color perception is abnormal, so that a patient sees everything as if through yellow glasses. The classical example of xanthopia occurs after ingesting santonin. Other drugs, such as amyl nitrite, picric acid, chromic acid, and large doses of digitalis may produce colored vision. More recently abnormal color perception has been reported after use of streptomycin. Many kinds of pathological ocular function, including bloody injection of the ocular apparatus, disturbances of accommodation, amblyopia, amaurosis, and even total blindness, have occurred following snake bite. Ptosis or paralysis of the eyelids is quite characteristic after cobra bites. The great reference books on toxicology, such as those of Kobert, Lewin, and Blyth, do not mention xanthopia or any other color dis-

turbances of vision, but a book by Paresch Banerji entitled "Hand book of Snake-bite" (London, Butterworth & Co., Ltd., 1929) speaks on page 38 of a rare perversion of sight in which a victim after snake bites "sees everything in red." Nevertheless, in the histories of 1,134 cases of poisoning by bites of all kinds of snakes in this handbook no xanthopia is reported, although other disturbances of the eye and its appendages are very frequently mentioned. The only other work referring specifically to xanthopia is by Hilbert, who published an article entitled "Gelbsehen nach Schlangenbissen" (*Memorabilia* [new series] 18 1-15, 1900). It deals with ocular disease after snake poisoning. Now that certain snake venoms are used therapeutically, it is interesting to note that cobra venom in experimental psychological tests actually improved the acuity of vision and enlarged the field of vision in 35 normal persons (Macht and Macht *J Exper Psych* 25 481-493, 1941).

ORANGE JUICE, MEAT, AND MILK

TO THE EDITOR—*How much orange juice will provide the alkalinizing effect of 1 gm of sodium or potassium citrate? How much available potassium is provided by 50 cc of orange juice? What percentage of uncooked muscle meat is available as net protein to the consumer? How much cow's milk gives 1 gm of calcium to the imbiber?* M.D., Pennsylvania

ANSWER—H. C. Sherman's book, "Chemistry of Foods and Nutrition," states that the alkaline effect of 100 gm of orange juice is about equivalent to 5 ml of normal alkali. Therefore, 1 gm of anhydrous sodium citrate would be roughly equivalent in alkalinizing effect to about 230 ml of average orange juice and 1 gm of anhydrous potassium citrate would be equivalent to about 195 ml of juice. According to Bills, McDonald, Niedermeier, and Schwartz (*J Am Dietet A* 25 304, 1949) the potassium content of orange juice is about 190 mg per 100 gm. Therefore, 50 ml of orange juice would contain about 95 mg of potassium. Whether all of this is in an available form is not known. Uncooked lean beef contains 18 to 20% of protein. After cooking the protein content varies from about 25 to 27% because of the decrease in moisture. Average whole milk contains 118 mg of calcium per 100 ml, according to U. S. Department of Agriculture Handbook No. 8, "Composition of Foods, Raw, Processed, Prepared." In order to obtain 1 gm of calcium it would be necessary to ingest about 850 ml.

SHOWERS AND APOPLEXY

TO THE EDITOR—*Is there any evidence that habitual cephalic warm and cold showers started early in life help to maintain cortical and subcortical vascular elasticity, thus preventing cerebral apoplexy due to arteriosclerosis?*

C. D. J. Generales, M.D., New York

ANSWER—So far as it has been possible to ascertain, there are no evidences of either beneficial or detrimental effects of warm and cold showers on the pathogenesis of cerebral arteriosclerosis, and there are no physiological reasons why this procedure should have any appreciable effect on the probability of apoplexy. The prevention of apoplexy is essentially the prevention of cerebral arteriosclerosis. External heat or cold do induce changes in the peripheral arterial tension (as illustrated by the cold pressure test of Hines and Brown in early or potential hypertensive disease) and thus by changing the intravascular pressure in the cerebral vessels affect the intracranial circulation. There is much reason to doubt whether intracranial arteries and/or arterioles have the capacity to expand or contract to any significant degree. In view of the impression that apoplexy due to thrombosis in narrowed sclerotic vessels may be precipitated by relative hypotension (sleep, anesthesia, or perhaps, external heat) and that the trigger setting off the cerebral hemorrhage through the weakened sclerotic arterial walls may be an

acute rise in the systemic arterial pressure (rage, fear, violent effort, cold plunge, etc.) it could be argued that warm and cold showers might predispose to apoplexy rather than prevent it

ERYTHROMELALGIA

TO THE EDITOR—*I saw a 5 month-old boy who for a month had been having attacks of redness of the feet with obvious local heat in the feet and pain during the attacks. The episodes last for 20 to 30 minutes and are precipitated by holding the baby with the feet dependent and probably by application of heat. The attacks appear to fit the description of erythromelalgia. What other disease should be considered in the differential diagnosis? What is the treatment and prognosis?*

J H Rogers M D, Gadsden, Ala

ANSWER—From the description, the findings are consistent with the diagnosis of erythromelalgia. While this disease has been observed at every age, it is rare below the age of one year. Erythredema polyneuropathy must be differentiated from this disorder in infants. It presents red and painful extremities and is commoner at this age period. The clinical findings in erythredema polyneuropathy are, however, quite distinctive and dramatic and differ from those of erythromelalgia in that, in addition to the local findings, the child is alternately irritable and restless and then apathetic. This disease is persistent rather than episodic, and the hands and face are prominently involved. There is edema, desquamation, and profuse sweating. Photophobia is marked in most patients, and alopecia and salivation are generally present. If such a clinical picture is present, erythredema polyneuropathy must be considered and appropriate studies should be undertaken, such as examination of the urine for arsenic or mercury. Erythromelalgia, on the other hand, presents no such clinical findings. The most prominent symptoms are pain and hyperemia, which are usually localized in the feet and are especially marked if the feet are dependent or their temperature is increased. The symptoms appear at intervals at first, later they may be persistent. Erythromelalgia in some patients accompanies organic vascular diseases, while in others it appears to be due to stimulation of centripetal vasodilator fibers of the posterior roots or peripheral nerves. Syringomyelia and cord tumor have been found in some patients. In most of the patients studied, however, no organic disease has been found and hyperirritability of the vasomotor mechanism occurring in neuropathic patients has been suggested. Little or no information is available on the prognosis of erythromelalgia in infants. Trophic changes generally ensue in the involved feet and hyperesthesia becomes marked. The treatment in the absence of a specific cause is symptomatic. The affected extremities should be kept horizontal to diminish the vasodilatation and associated pain. Cool baths often afford relief of pain, but epidural injections of local anesthetics have not been tried on enough patients to warrant any conclusions as to their efficacy.

TREATMENT OF NEURITIS DUE TO ANEMIA

TO THE EDITOR—*What is the latest treatment for neuritis following pernicious anemia?*

Joseph A Oliver M D, Rockwell N C

ANSWER—Cyanocobalamin (vitamin B₁₂) and liver extract constitute the only effective treatment for the neurological manifestations of combined system disease associated with pernicious anemia. There is no evidence that other measures are of any value. It is probably worthwhile to give as much as 1,000 mcg of cyanocobalamin intramuscularly once or twice a week for five or six injections in order to make certain that the tissues contain optimal amounts of the vitamin, but there is no convincing evidence that these large doses are therapeutically superior to injections of 30 to 50 mcg once or twice weekly. As long as cyanocobalamin is given in these amounts there is no contraindication to the simultaneous administration of folic acid, but the latter is of no value in the treatment of the neurological changes and is not required for effective treatment of the anemia. If folic acid is given without adequate amounts of cyanocobalamin, the neurological symptoms may become more severe.

MUMPS VACCINE

TO THE EDITOR—*What is the efficacy of mumps vaccine? Can it be combined in the same syringe with diphtheria-tetanus toxoid? In the past school year 380 cases of mumps occurred in 2,200 Navaho students. We anticipate about 500 new students 10 years old or older next fall. The new students have had no previous schooling and hence supposedly very little exposure to mumps. Should this new group be vaccinated against mumps? What is the duration of the resulting immunity? Would repeat vaccinations be required?*

M.D., Utah

ANSWER—Although reports on the clinical efficiency of mumps vaccine are meager, some physicians who have used it are favorably impressed with its value. The combination of mumps vaccine in the same syringe with diphtheria-tetanus toxoid might be ill advised. Ordinarily diphtheria-tetanus immunization would be undertaken before one year of age—generally at about 3 months. Mumps is rare during the first 12 months of life. Prior to puberty mumps complications, with the exception of encephalitis, are also rare. If children have been exposed it is probably better for them to have mumps than to face the possibility of acquiring the disease later during adult life. If there have been no active immunizations in students who are 10 years old or older there are likely to be some fairly severe reactions when diphtheria-tetanus toxoid is administered. Mumps vaccine is grown in chick embryos. Therefore, anyone allergic to egg might experience a severe reaction that could intensify any sensitivity due to the diphtheria-tetanus toxoid. For statistical purposes and clinical observations, it would be interesting to vaccinate one half of the new pupils. Immunity obtained by mumps vaccine lasts 6 to 12 months. To control an outbreak of mumps, vaccine would probably have to be repeated every six months.

TENDERNESS IN FOOT

TO THE EDITOR—*What is the cause and treatment of a subacute tenderness to finger pressure and hand squeezing along the lateral side of the left foot only? The patient is 50 years old and has no signs of shoe pressure and no other symptoms. The tenderness does not involve the heel or toe, only the mid portion of side and adjacent dorsum.*

Wm S Levy, M D, Woonsocket, R I

ANSWER—Without any other findings or a history of trauma this case would probably be the result of foot strain. Since the outer side is the strong part of the foot such a strain would presuppose the wearing of a stiff-shanked shoe or some other type of arch support. Strain of the lateral side of the foot is difficult to relieve with supportive measures. Treatment will require a decrease in the amount of time the patient stands or strains his foot. Relief of the strained tissue may be obtained by rest, hot moist packs, and light massage. Simple adhesive strapping with the heel in varus will permit function while recovery occurs.

PULSATION OF BRACHIAL ARTERIES

TO THE EDITOR—*Is there any significance to the sign of visible pulsation of the brachial arteries?*

Joseph V Waitkunas M.D., Woodhull III

ANSWER—In the younger age group visible pulsations of brachial arteries are sometimes seen in thin persons or when the arteries are unusually close to the surface and such is of no clinical significance. In middle aged persons visible pulsations are not unusual especially when there has been muscle wasting. Such pulsations alone are of little significance. However if the arteries on palpation are hard and tortuous it is a definite sign of arteriosclerosis. Also aneurysm of the brachial artery will cause visible pulsation but this is unilateral. Visible pulsations of the brachial arteries should be considered in connection with the examination of the other arteries such as the radial and the retinal vessels.

SEDIMENTATION RATE AND ANTICOAGULANTS

TO THE EDITOR—*What changes in the sedimentation rate occur before, during, and after anticoagulant therapy such as is currently used in treating myocardial infarction?*

G E Huston, M D , Marietta, Ohio

ANSWER—Early in the era of anticoagulant therapy, it was reported that the sedimentation rate was increased by the use of anticoagulants. A careful investigation made by Wright and Prandoni (*J A M A* 120 1015 [Nov 28] 1942) on the effect of bishydroxycoumarin (Dicumarol) on this phenomenon has established that this is actually not the case. Later studies by the same workers and others confirmed these findings and established that the same was true for most of the anticoagulants in clinical use today. Increase of the sedimentation rate is rather commonly associated with the diseases for which anticoagulants are given, such as myocardial infarction, thrombophlebitis, and pulmonary embolism, but, even though anticoagulant therapy is continued, if the disease process in a patient subsides and there is no other cause for an increase in the sedimentation rate, it will return to normal levels.

X-RAY THERAPY

TO THE EDITOR—*Are there any long-range adverse effects from the therapeutic use of x-rays in the treatment of osteoarthritis of the lower back? This request is predicated on the presumption that the diagnosis is correct and the therapy is being rendered by a competent radiologist.*

A Morris Ross, M D , New York

ANSWER—If the assumption can be made that the x-ray therapy in the case of osteoarthritis of the lower back is given by competent radiologists, there should be no risk whatsoever of delayed or long-range adverse effects. The doses of x-rays usually used lie well within the limits of safety.

PREGNANCY TEST

TO THE EDITOR—*Please send me details of the technique used in running the pregnancy test on Rana pipiens.*

M D , Alabama

ANSWER—The details of the technique used in performing the pregnancy tests on *Rana pipiens* can be found in either *Endocrinology* (43 349, 1948) or *Science* (107 198, 1948). In brief the procedure is as follows: 1 The first morning urine specimen is obtained. 2 Five cubic centimeters is injected subcutaneously in the dorsal or lateral lymph sac of the male frog, two or more frogs are used in each test. 3 The injected frogs are set aside in glass jars for four hours. 4 Urine is obtained from the cloaca with a fine pipette at two and four hours. 5 The urine is examined microscopically, and the presence of sperm in the urine indicates a positive test.

BCG VACCINE

TO THE EDITOR—In *THE JOURNAL*, July 3, 1954, page 949, is a query on BCG vaccine. The reply contains a statement to the effect that this vaccine would do no particular harm. Such a statement has long been challenged by many physicians. I believe the readers should know some of the reasons for this challenge.

When Calmette and Guérin gave this bacillus their names in 1921 and declared it a *virus fixé* in 1924, it was so reduced in virulence that it would not produce tubercles in animal tissues. However, since that time significant changes have occurred in the cultures. Suter, Schaefer, and Dubos (*Proc Soc Am Bact*, 1951, page 90) have carefully examined BCG cultures from several laboratories, including the two mentioned in this reply. They found no two alike even on gross culture appearance, and they found that each culture examined was composed of multiple bacterial forms instead of the single bacterial form in the BCG produced by Calmette. Moreover, Pierce, Dubos, and Suter (*Proc Soc Am Bact*,

1951, page 90) observed that among these multiple forms there was considerable variation in the invasiveness of animal tissues. This leaves no doubt that BCG cultures have undergone marked changes since Calmette designated his original one a *virus fixé*. Apparently no two cultures examined have undergone the same changes. These changes probably account for the alarming occurrences following administration of BCG to persons and animals during the last 25 years. In so many persons who received BCG subcutaneously, abscesses and ulcers developed at the sites of administration and disease of regional lymph nodes broke down and discharged pus for months, so that scarification and puncture methods of administration were recommended. Although this reduced the incidence, there are still many such cases reported each year. These are clinical lesions that behave like those from natural infections. Some of them require treatment including surgery and antimicrobial drugs. Dubos (*Am Rev Tuberc* 60 670, 1949) found that, when BCG was introduced into mice on deficient diets, progressive and sometimes fatal pulmonary tuberculosis developed. Vorwald, Dworski, and Pratt (*Am Rev Tuberc* 62 455, 1950) produced progressive and killing tuberculosis in silicotic guinea pigs with BCG from two different laboratories. Hauduroy and Rosset (*Compt rend Acad d sc* 232 445, 1951) produced progressive tuberculosis in normal golden hamsters and ground squirrels. When BCG was introduced intraperitoneally, all golden hamsters were dead from widely disseminated tuberculosis in four months. When introduced intracutaneously, all animals were dead in 12 months.

Many persons who have received BCG have later had clinical tuberculosis, and a considerable number have died from this disease. Attempts to determine the type of bacilli causing illness and death have been far too few. In *THE JOURNAL*, May 1, 1954, page 61, attention is called to seven cases of lupus vulgaris having developed from BCG. This was prophesied 12 years ago by J A Jensen of Denmark, because he found the virulence of BCG was only a little less than that of the usual tubercle bacillus. In the June 19, 1954, issue of *THE JOURNAL*, page 773, a well-documented case of tuberculosis resulting fatally from BCG is reported. BCG was administered when the man was 20 years old. This resulted in a reaction to tuberculin within six weeks. The first clinical lesion appeared about a year later. From then on numerous clinical lesions developed in various parts of the body including the lungs and kidneys. He died from tuberculosis in December, 1953, and BCG was recovered from the numerous lesions. Such cases make one strongly suspect that in the past some clinical and some fatal cases of tuberculosis in those who previously received BCG were due to the BCG itself rather than its failure to protect against natural infection. In any event, the well-documented evidence regarding BCG cultures and the disease it produces in animals and persons is cause for alarm and justifies challenging the statement in this reply, or wherever it is made, that BCG does no particular harm.

J A Myers, M D

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University of Minnesota

Minneapolis 14

TO THE EDITOR—I am concerned regarding the answer in the July 3, 1954, issue of *THE JOURNAL*, page 949, to a question on BCG vaccine. I feel that the reader would have the impression that this so-called vaccine could do no harm. In recent years an impressive amount of information has been gathered in studies on cultures, animals, and human beings that forces one to challenge a statement to the effect that BCG is without harm. After approximately 40 years of use, BCG remains a controversial question in all parts of the world. Most certainly great caution is justified.

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THE GENERAL PRACTITIONER AND THE MEDICAL SCHOOL

E Grey Dimond, M D, Kansas City, Kan

This paper outlines efforts being made at the University of Kansas Medical School to develop a program that maintains for the university the great value of the specialties as an administrative framework, as the backbone of residency training, and as a means of maintaining high standards for consultation and referral practice, and, concurrently, a program providing a large role for the general practitioner

The methods being used are extramural and intramural preceptorships, postgraduate and circuit courses, and the appointment of general practitioners to the full-time staff. These are not "planned" or "projected," but are major, established functions of the school

PRECEPTORSHIPS

Extramural—All senior students are required to spend from five to six weeks as preceptees (fig 1). A panel of general practitioners selected by a committee of the state medical society is submitted to the school, and from this list suitable preceptors are chosen. The preceptor is selected only from towns of 2,500 population or less and must be a "solo" practitioner. Although the school recognizes that all of our students are not planning to be general practitioners, and some have well-made plans for research or a specialty, no other form of preceptorship is permitted. This is to be an experience in "pure" family practice. Understandably, the school has had requests from clinic groups, from general practitioners in cities, and from specialists, but the school has felt that the fundamental plan—to give every student an exposure to life as a family physician—could be best achieved by not making exceptions. The success of the program has been strengthened by insistence on this "no exception" rule.

The practitioner has the responsibility of providing room and board for the preceptee. No salary is permitted. The lodging is provided in the physician's home by about half the preceptors, others have arranged quarters in a garage apartment, a room at the office, or in a local hotel. The exact relationship between the student and

physician varies widely. Some of the students become a true member of the family—living in the home, eating every meal with the preceptor, making every house call, getting up for every emergency with him. The preceptor is charged with the responsibility of supervising the student's activities, the preceptor must not consider the student as his associate and send him on house calls and emergencies alone. The student assists him in every way, but the preceptor must not consider the student as a *locum tenens*. Because such a detailed experience can be a burden, not only for the physician, but for his wife, the school tries to rotate the responsibility among the preceptors, allowing a "breather" before the next student.

Why was the period of five to six weeks selected? First, this is a fair share of the curriculum time. Although the school is anxious for the student to have this opportunity, it still realizes that other units in the curriculum have merit and deserve their *proportionate time*. Secondly, present day seniors are usually married, and more than a month is a long period of time for them to be away from their wife and children. And thirdly, having a young student living in your home, and stalking your every activity, is exhausting for the physician and his wife. Why not allow the preceptorship to be an elective, with the student free to choose or reject it? The school believes that the concept of preceptorship has such merit that it deserves a full curriculum status, as do surgery, pediatrics, etc. Further, preceptorship, when a formal part of the curriculum, has dignity and stature, as an elective, it is tantamount to the school's saying "Take it if you want, but look at the choice courses you might take if you stay here at the medical school!" As an elective, it places the preceptor and the school in competition for the student's favor.

Intramural—The program described above provides an opportunity for the physicians in small towns to take part in the teaching, however the general practitioners in the urban community of the school are excluded by the requirements restricting town size. In an effort to

give this group a medical school affiliation, the school has invited the Kansas City Academy of General Practice to present a panel of local general practitioners, and from this the school has selected a group of intramural preceptors. These men have been assigned the responsibility of staffing the outpatient medicine clinic one morning each week. To this clinic, senior students are

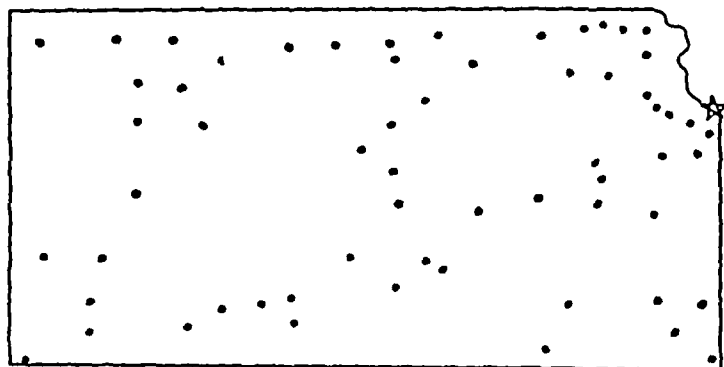


Fig 1—Kansas towns in which senior medical students served with general practitioners in 1953

assigned. Each student is provided with a small office and examining equipment. The initial history and examination is done by the student, then reviewed by the preceptor. Each preceptor sees approximately five patients in a morning and continues on the service for three months.

CIRCUIT COURSES AND POSTGRADUATE INSTRUCTION

Traditionally, the school's responsibility ended on the student's graduation. Proof of his knowledge was determined by a state licensing agency, his continuing education was his own responsibility. Various organizations—county, state, and national—offered him educational opportunities. Certain medical schools in the United States and abroad became recognized postgraduate centers. Strangely enough, the physician's own university, with all of its facilities, assumed a very minor responsibility. It is in this area that the medical school of today and tomorrow will make its greatest contribution. The four year exposure to the mass of knowledge offered prior to the degree is but a small share of the total years of active practice remaining. It is during these practice years that the physician's regional medical school must make available to him continuing opportunities for medical education.

The physician will continue to learn from experience and from his "practice," but changing techniques and new knowledge make medicine a flowing, changing event. No medical school curriculum should concern itself with the responsibility of teaching "all" of the scope of medicine. The school succeeds if it shows the student how to approach a patient's problem, how to assay data, what it means to be allowed to be a physician, how to use a library, and how to do critical thinking. After the student's graduation, the school's postgraduate division should assume the obligation of filling in the framework,

of offering opportunities for study in special fields, and of maintaining "refresher" programs.

The inclusion of general practitioners throughout the state in a preceptor program serves to awaken and maintain this desire for postgraduate education. Forty-nine of our 62 preceptors were enrolled in postgraduate courses at the University of Kansas Medical Center in 1953. Here would seem to be a true example of "continuing" education.¹ The University of Kansas Medical Center has attempted to meet this responsibility in several ways. The center has assumed a regional responsibility for postgraduate education and is enrolling in its courses physicians primarily from the Kansas, western Missouri and Iowa, eastern Nebraska, northern Oklahoma and Arkansas area. As evidence of the vigor of the program, more physicians enrolled in 1953 in postgraduate courses at the University of Kansas Medical School than any other medical school in the United States. The postgraduate techniques can be outlined as circuit and postgraduate courses.

Circuit Courses—Over a period of years, members of the staff, in teams of two, have toured defined circuits over the state of Kansas (and recently Missouri). Each tour lasts one week, each man speaks twice a day. An advance agent proceeds the pair, arranging location, accommodations, and enrollment. The route of the circuit is chosen each year by a committee from the state medical society, the state board of health, the Academy of General Practice, and the school. Enrollment in such courses was 489 in 1953-1954 (fig 2).

Postgraduate Courses at the School—Complementing the circuit course, but offering instruction based on clinical material and freely using nationally known guest lecturers, each department and section of the school is responsible for arranging and presenting courses at the school. The courses vary in length from two to five and a half days. In 1953-1954, 21 such courses were given, covering such fields as anesthesia, radiology, auscultation, pediatrics, and hematology, with 1,730 physicians in attendance.² A separate auditorium, seating 100, is maintained for this program, and the school has recently completed a suite of hotel room accommodations, providing quarters on the campus for the participants.

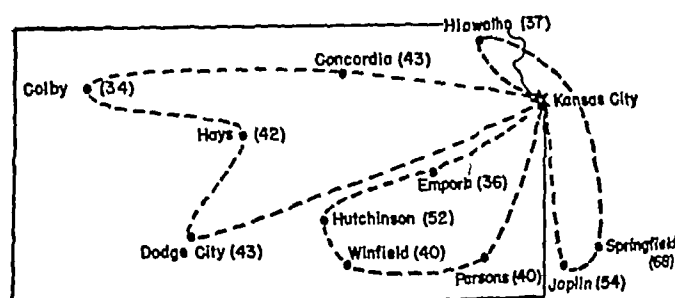


Fig. 2—Route of three 1953 circuit courses with physician attendance indicated

GENERAL PRACTITIONERS ON FULL-TIME STAFF

Although the school has been successful in incorporating general practitioners into its teaching program and in providing them with opportunities for continuing education, it was felt advantageous to have a general practitioner as an actual member of the full-time staff. By this means, the preceptors would be provided with a spokes-

¹ Delp, M. H. In the Objectives of Postgraduate Medical Education, panel discussion before the Congress on Medical Education, Chicago, Feb 8, 1954.

² University of Kansas Medical School Post Graduate Education Bulletin, Kansas City, Kans. University of Kansas, 1953.

man at the school, and the school would be provided with a man with the proper background to supervise properly the preceptor program, both extramural and intramural. Furthermore, such a man would act as an experienced guide in planning circuit course programs. Because general practitioners and internists each provide "family physician" care, the department of medicine proves the ideal place to integrate a general practitioner into the administrative framework and into undergraduate teaching. Such a physician has been on the staff during the past year, he has had formal responsibility for the preceptor programs and is a member of the postgraduate division.

BENEFITS OF THE PROGRAMS

Benefits to the Student—The extramural preceptor program provides the student with a sample of true family practice, here he actually experiences an important feature of medical care, the patient-physician relationship. He sees patients in the home environment, he sees patients with a social status similar to those for whom he will provide care during his own practice days, and he sees the total patient, as a member of a family and community. The school believes the preceptorship supplies a more accurate sample of what is meant by "total patient care" than any other means. Other schools have utilized such techniques as assigning students to families or persons selected from their welfare clinics. Such techniques are artificial, exposing the student to unreal and unlikely environmental factors. The preceptorship is a true sampling of the practice of medicine. The student learns the economics of medicine, the politics of medicine, his wife often accompanies him on the preceptorship and gains, for the first time, an awareness of the role of the physician's wife.

Benefits to the State—It is difficult to document the number of students that the preceptor program has actually attracted to the more rural areas of Kansas. How many might have gone into the region without the program, how many have been dislocated by military service, how many decided against general practice after actually seeing the general practitioner's problem—these are all factors that make any statistical analysis inaccurate. However, two arithmetic items are significant. First, in Kansas towns of 1,000 or less, 220 additional general practitioners have begun practice. For the previous 50 years, there had been a yearly loss of physicians from these Kansas areas. Second, in the years 1900 to 1950, Kansas consistently lost more physicians than it gained. In 1950, and again in 1951, Kansas gained 100 physicians. The citizens of the area have certainly benefited from the "continuing" education of the preceptors. Extension of the postgraduate efforts to include lay education programs will further benefit the citizens.³

Benefits to the Physician—The student serves as a vital stimulus to the physician. The student fresh from the school brings ideas and questions that provoke thought and reading. The physician seeks postgraduate education. In 1953-1954, 79% of the preceptors were enrolled in courses at the University of Kansas alone. Of the 1,730 physicians enrolled for postgraduate courses given by the school, 991 were from the state of

Kansas (total physicians in state, 2,100). The number enrolling elsewhere would increase this percentage. The practice of medicine gains new excitement when it is combined with the responsibility of teaching.

Benefits to the School—The school benefits in several ways. First and primarily, the mission of the school, to prepare physicians for the particular needs of its own geographical area, is more adequately realized. A further mission of the school, to provide continuing education for its regional physicians, is certainly achieved. A third benefit, intangible but real, results. The practitioners throughout the region, as members of the teaching staff and as participants in continuing education, give the school their enthusiastic support. Anyone familiar with the problems of a medical school can appreciate the value of enthusiastic and loyal regional physician support.

COMMENT

A medical school has certain obligations. Two of these are the preparation of physicians for "family care" and the continuation of the physician's education during his practice years. To meet these obligations, the University of Kansas Medical School has set up a program including extramural and intramural preceptorships, postgraduate and circuit courses, and appointment of general practitioners to the full-time staff. Benefits to the student, the state, the physician, and the school have been shown. For the future, general practice residencies and staffing of the postgraduate division are logical additions to the program.

3 Wescoe W C. Responsibilities of the Medical School to the State. *It Serves Missouri Med* 50: 841 (Nov.) 1953. *Your School of Medicine J Kansas M Soc* 54: 63 1953.

Renal Insufficiency—Renal lesions once thought irreversible have in many instances proved to be highly reversible. While renal function in these instances has not always been completely recovered, it has been sufficiently restored to allow a return to normal life—women have been able to undertake pregnancy and men to resume their activities as breadwinners. Probably the greatest stimulus to the changing point of view has been the increased knowledge derived from the study of acute tubular necrosis (so-called lower nephron nephrosis), which, while indeed serious and in many instances fatal, is susceptible of remarkable healing. If after its onset an internal environment compatible with life can be maintained, renal tubular repair will begin, and if sufficient time can be gained, resumption of renal function will occur. In acute tubular necrosis, "time" for healing has been gained by use of extracorporeal artificial kidneys, transperitoneal lavage, conservative medical means, and by other measures.

If acute lesions can heal, it seems logical to assume that chronic lesions also may heal, provided there is sufficient time to do so and that further injury can be prevented. As with acute lesions, meticulous attention is directed to the restoration of distorted chemical patterns resulting from renal insufficiency. Particular attention is focused upon reestablishing the fluid and electrolyte balance so necessary to normal physiologic function. The progress of many patients with chronic renal insufficiency seems to support the idea that some healing does occur.

A physician who disavows the challenge of treating renal insufficiency, regardless of its duration, fails in his obligation, since he may lose the opportunity of bringing about a cure or at least adding years to the patient's life.—J. Hopper Jr, MD, A. Bolomey, MD, and R. Wennesland. *Chronic Renal Insufficiency. Part I. Appraisal of the Patient. Part II. Treatment, Annals of Internal Medicine* July 1954.

HEPATITIS FOLLOWING THE INGESTION OF PHENYLBUTAZONE

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Many of the toxic reactions to phenylbutazone have been reported previously, these have included edema¹ and toxic effects on the skin,² gastrointestinal tract,³ hematopoietic system,⁴ central nervous system,^{5a} heart,⁵ and probably the eye.^{5a} The possibility of deleterious effects of phenylbutazone on the liver has not been publicized adequately. The following case reports illustrate the potential severity of such complications.

REPORT OF CASES

CASE 1—A 78-year-old white housewife was hospitalized on Nov. 28, 1952, because of jaundice of four days' duration. For some 40 years she had complained of multiple joint pains, which were caused by degenerative joint disease, especially of the hips. On Oct. 16, 1952, phenylbutazone therapy was started in a daily oral dose of 800 mg. Symptomatic improvement was noted. On or about Nov. 1 she experienced mild abdominal pain, which persisted until her entry into the hospital. On Nov. 15, she first noted that her urine was darker than normal. Jaundice was observed on Nov. 25, and phenylbutazone therapy was discontinued the same day. Three days later she was hospitalized.

The patient had received no injection for at least six months previous to this illness. She had never been given transfusions or exposed, to her knowledge, to persons with jaundice or to any known hepatotoxin. At the age of 19 she had had jaundice for four days. Her history was otherwise noncontributory. On the patient's admission into the hospital, physical examination showed an obese woman who was moderately icteric. The temperature was 98 F, pulse rate, 72 beats per minute, and blood pressure, 150/80 mm Hg. Motion of both hips was markedly restricted. A smooth, soft, and slightly tender liver edge was palpable 4 cm below the right costal margin in the midclavicular line. No other physical abnormality was present.

Hospital Course—The patient's general condition was fairly stationary for about one week. Treatment included a high protein diet and administration of supplemental vitamins. On Dec. 6, the patient's condition deteriorated, profound anorexia, nausea, frequent emesis, and increasingly severe abdominal pain were noted. She was maintained thereafter on parenteral fluids. Her

subsequent course was progressively downhill with increasing jaundice. On Dec. 8, she showed signs of congestive heart failure, for which she was digitalized. On Dec. 12, she became irrational and semicomatose and had only semilucid intervals thereafter. She was afebrile throughout her hospitalization, except for the period from Dec. 7 through Dec. 10, when her temperature rose but did not exceed 100 F. She died Dec. 15.

Laboratory Data—On Nov. 29, the packed cell volume (PCV) was 35 cc %, hemoglobin, 11.8 gm per 100 cc, white blood cell count, 8,100 per cubic millimeter with 71% polymorphonuclear cells and otherwise normal differential count, and corrected sedimentation rate (Wintrobe), 38 mm at the

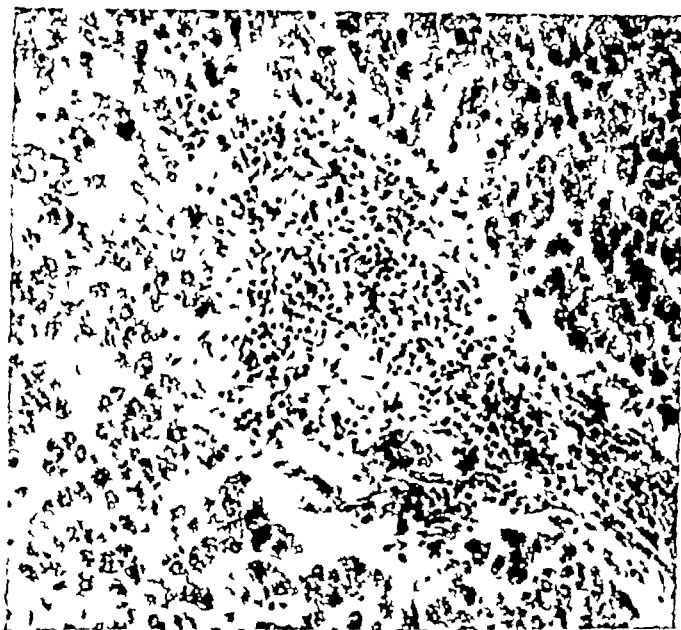


Fig. 1—Section of liver of patient reported on in case 1. Liver cells show degenerative changes and some appear to be necrotic. Delicate strands of fibrous tissue extend from the portal space, adjoining which there is some cellular infiltration.

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Dr. Albert W. Snell aided in the preparation of this paper.

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end of one hour. Urinalysis showed normal results except for the presence of bilirubin (1+). The serologic test for syphilis was negative. On Dec. 2, the PCV was 40 cc %, hemoglobin, 10.4 gm, erythrocytes, 3,300,000 per cubic millimeter, leukocytes, 7,250 per cubic millimeter with 78% polymorphonuclear cells, platelets, 112,000 per cubic millimeter (normal, 250,000 to 300,000), and bleeding and clotting times, normal. On Dec. 8, the PCV was 37 cc %, hemoglobin, 10.0 gm, white blood cell count, 9,550 with 77% polymorphonuclear cells, and corrected sedimentation rate (Wintrobe), 44 mm at the end of one hour.

Liver function studies on Dec. 1 showed thymol turbidity value, 5 units, thymol flocculation, none, zinc sulfate turbidity, 6 units, cephalin flocculation, none in 48 hours, serum bilirubin, 5.7 mg per 100 cc in 1 minute, 8.4 mg in 30 minutes, serum alkaline phosphatase, 29.7 S. I. & R. (Shinowara, Jones, and Reinhart) units, serum cholesterol, 752 mg per 100 cc, total serum protein, 6.3 gm per 100 cc, with albumin 3.2 gm and globulin 3.1 gm, and prothrombin time, 81% of normal. On Dec. 4, the serum cholesterol level was 1,026 mg. On Dec. 7, a two-hour urine urobilinogen test showed 2.36 Ehrlich units. On Dec. 8, the tests showed thymol turbidity, 5 units, thymol flocculation, none, zinc sulfate turbidity, 5 units, cephalin flocculation, none in 48 hours, serum bilirubin, 7.3 mg in 1 minute and

128 mg in 30 minutes prothrombin time, 66% of normal, serum protein 6.5 gm with albumin 3.0 gm and globulin 3.5 gm serum cholesterol, 986 mg, and alkaline phosphatase, 402 S J & R units

A liver biopsy, which was performed on Dec 3 was compatible with a diagnosis of cholangiolitic hepatitis with no evidence of hepatic biliary obstruction. A roentgenogram of the chest on Dec 1 showed pulmonary congestion and edema with possible hypostatic pneumonia at the right apex. Attempts to visualize the gallbladder failed on two occasions.

Autopsy—At autopsy the significant alterations were noted in the heart and liver. The coronary vessels showed extensive arteriosclerosis, while old and recent infarcts were seen in the myocardium. These were believed to be the immediate cause of death. The liver weighed 1,815 gm and was dark brown and firm. The sectioned surfaces of the liver bulged in some areas and extensive mottling was noted throughout. Microscopic sections of the liver showed infiltration of the portal spaces with polynuclear and mononuclear leukocytes. Projecting from the portal spaces were septal strands of fibrous tissue, which were also infiltrated with inflammatory cells. Adjoining liver cells showed degenerative changes, and a smaller number were necrotic. These pathological alterations are those of an acute toxic hepatitis (fig 1).

CASE 2—A 40-year-old housewife consulted her physician on Dec 30, 1952 because of pain in the left shoulder of several days duration. A diagnosis of bursitis was made. The patient's history was entirely noncontributory. She had never had gastrointestinal symptoms or jaundice. She had never received parenteral injections or transfusions, and she was not aware of exposure to hepatotoxins or to anyone with jaundice. Phenylbutazone therapy, with doses of 200 mg three times daily, was started on Dec 30, 1952. On Jan 2, 1953, the use of phenylbutazone was discontinued because of severe nausea and vomiting. During the next few days the patient complained of malaise, anorexia, and vague epigastric distress without relation to meals. On Jan 12, icterus was first noted. Jaundice increased progressively and reached its maximum on Jan 31, when the stools were totally clay-colored. Treatment consisted of rest and a high carbohydrate, high protein, low fat diet with supplemental vitamins. Her subsequent course was one of slow improvement and was generally uneventful. A biopsy of the liver was done on Feb 8. Jaundice gradually receded, and by March 2, 1953 the patient looked and felt normal and has continued to do so ever since.

Laboratory Data—On Jan 24, 1953, the cephalin flocculation was 1+ in 48 hours, icterus index, 92, urine urobilinogen, 1+, undiluted (slightly reduced). On Jan 31, the icterus index was 125. On Feb 2 the blood level of phenylbutazone was 2.36 mg per 100 cc (control studies ruled out a false determination because of icterus). On Feb 4 the hemoglobin level was 13.2 gm per 100 cc, red blood cell count, 4,280,000 per cubic millimeter and white blood cell count, 7,900 per cubic millimeter with 79% polymorphonuclear cells. The urine contained bile. The urinary urobilinogen test was positive, 1:10 cephalin flocculation, 3+ in 24 hours and 4+ in 48 hours, thymol turbidity 17 units, icterus index 102, serum bilirubin level, direct 12.7 mg per 100 cc and indirect, 18.8 mg. per 100 cc, serum cholesterol 178 mg per 100 cc, cholesterol esters 68% serum alkaline phosphatase 62 King-Armstrong units, serum protein 6.2 gm per 100 cc, albumin, 3.5 gm and globulin 2.7 gm and prothrombin concentration, 100%. On Feb 6, the icterus index was 76 units. On March 2 the hemoglobin level was 12 gm, white blood cell count, 4,950 with 59% polymorphonuclear cells, urine urobilinogen positive 1:20, icterus index, 22, serum bilirubin, 4.7 mg, cephalin flocculation 3+ in 48 hours. On April 16 the icterus index was 7, serum bilirubin, 1.25 mg and urine urobilinogen, positive dilution 1:20. On April 29, the cephalin flocculation was 3+ in 48 hours, icterus index 5, thymol turbidity 4.5 units, zinc turbidity 11 units, serum bilirubin, direct, 0.31 mg and indirect 0.37 mg, serum protein, 5.4 gm and albumin, 4.3 gm and globulin 1.1 gm %.

Roentgenograms on Feb 4, 1953 showed no abnormalities in the chest. An upper gastrointestinal tract series showed a constant duodenal deformity with an ulcer crater at its center. Local pressure showed no tenderness. On April 30, 1953 a gastrointestinal series showed healing of the previously noted duodenal ulcer with residual scar.

Section of the liver biopsy specimen, performed on Feb 8, showed slight cellular infiltration of the portal spaces and evidence of hepatocellular injury in the presence of shrunken, swollen, and degenerating cells. Some cells exhibited large hyperchromatic nuclei indicative of a regenerative response (fig 2). Although less acute, this picture was similar to the toxic hepatitis seen in the patient reported on in case 1.

CASE 3—A 62-year-old janitress complained of pain in the right shoulder of eight months duration. Her history was noncontributory, she had never received parenteral injections or transfusions, and there had been no known exposure to persons with jaundice or to hepatotoxins.

The physical examination showed moderate obesity. The blood pressure was 160/100 mm Hg. Findings were not otherwise contributory except for the right shoulder which was moderately restricted in motion and painful. On May 2, 1952,



Fig 2.—Section of tissue from liver of patient reported on in case 2. This section shows evidence of hepatocellular injury in the presence of shrunken cells, some showing nuclear chromatolysis.

she was started on a course of phenylbutazone, 200 mg four times daily. Subjective improvement occurred almost immediately. The symptoms recurred when the dosage was reduced. She was consequently maintained on a daily dose of 800 mg. On May 24, she complained of malaise, headache, upper abdominal discomfort, and rash. The use of phenylbutazone was discontinued immediately. Examination showed a morbilliform eruption over the extremities. The temperature was within normal limits. Mild icterus was noted. The abdomen showed no abnormalities; the liver and spleen were not palpable. A high carbohydrate, high protein, low fat diet and rest were prescribed. Within the next few days, the patient continued to experience general malaise and abdominal discomfort, and the icterus increased somewhat. On or about June 1, 1952 she felt improved and her subsequent course was one of progressive improvement. By June 26 she felt well and looked normal. At no time were the liver and spleen palpable.

Laboratory Data—On April 28, 1952 the packed cell volume (PCV) was 38 cc % corrected sedimentation rate (Wintrobe) 11 mm at the end of one hour, white blood cell count 5,000 per cubic millimeter with polymorphonuclear cells 60% and urinalysis within normal limits. On May 7, the white blood cell count was 6,400, May 14, 4,500, May 21, 4,000 and May 27, 6,000. Differential counts were consistently within normal limits.

On May 27, the hemoglobin was 14 gm per 100 cc, and the urinary urobilinogen was positive at 1:10. The urine contained bile. On May 29, the serum bilirubin was 2.8 mg direct and 1.0 mg indirect, thymol turbidity, 16 units, and cephalin flocculation, none at 48 hours.

CASE 4—A 63-year-old housewife complained of scattered aches and pains of several years' duration, which were believed to be due to degenerative joint disease. Her history was essentially noncontributory. She had received no parenteral injections or transfusions. There had been no known exposure to persons with jaundice or to known hepatotoxins. Physical examination was entirely normal, except for the presence of Heberden's nodes.

She was given phenylbutazone orally in a daily dose of 600 mg starting on July 17, 1952. Symptomatic remission occurred, and the drug therapy was therefore stopped on July 29. By Aug 6, symptoms had recurred, and phenylbutazone therapy was resumed, this time in a daily dose of 400 mg. On Aug 11, a generalized morbilliform rash developed, and she complained of malaise and upper abdominal discomfort. Icterus was noted, and the drug therapy was stopped immediately. On examination, the patient showed obvious mild icterus. The liver and spleen

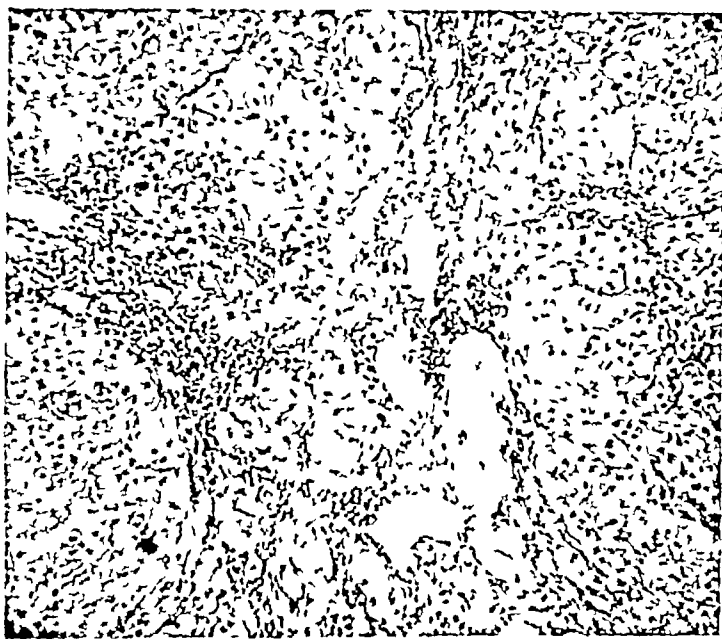


Fig 3—Section of liver of patient reported on in case 6. A representative section of the liver showing the characteristic appearance of so-called toxic cirrhosis.

were both palpable one to two fingerbreaths below the costal margin. The liver was slightly tender. The patient was treated with bed rest, high carbohydrate, high protein, low fat diet, and supplemental vitamins. Her clinical course was one of uneventful recovery. Within a few days, the liver and spleen were no longer palpable. By Sept 1, 1952, she was recovered clinically.

Laboratory Data—Repeated blood cell counts were within normal limits, the urine specimen contained bile. On Aug 12, the icterus index was 41, urine urobilinogen, positive at 1:10, and cephalin flocculation, none. Additional icterus indices were as follows: 32, 29, and 17, on Aug 14, 16, and 18, respectively.⁶

CASE 5—A 55-year-old white female physical therapist was hospitalized on Oct 6, 1953, because of jaundice of two days' duration. She had experienced recurrent joint pains due to degenerative joint disease since 1949. On Sept 28, 1953, phenylbutazone, 0.1 gm three times daily, was prescribed. On Oct 4, she noted malaise, upper abdominal discomfort, light stool, and dark urine, jaundice was observed, and the use of phenylbutazone was discontinued.

For one year she had had symptoms of angina pectoris. During the past eight months she had complained of rapid fatigue. In April, 1953, six months prior to the onset of hepatitis, she was given three intramuscular injections of vitamin B₁₂. The

syringes and needles had been sterilized in an autoclave. No other medicament had been administered parenterally. She had never received a transfusion. There had been no known exposure to hepatotoxins or to persons with jaundice.

On examination, the patient showed obvious icterus. The extremities were normal except for tenderness of the knees and the interphalangeal joints of the fingers. The remaining abnormal physical findings were limited to the abdomen. The liver was palpated four fingerbreadths below the right costal margin. Its edge was smooth and slightly tender. The spleen was not felt.

Treatment consisted of rest, a high protein diet, and administration of supplemental vitamins. For the first seven weeks her temperature varied between 98.6 and 101.6 F, and her course was one of progressive and intense jaundice. Subsequently she improved slowly, and her recovery was considered complete on Jan 17, 1954, when physical and laboratory tests showed essentially normal results.

Laboratory Data—On Oct 6, 1953, the hemoglobin level was 13.1 gm per 100 cc, white blood cell count, 6,200 per cubic millimeter with a normal differential, packed cell volume, 41 cc %, corrected sedimentation rate (Wintrobe), 40 mm at the end of one hour, urinalysis, results within normal limits except for the presence of bile, blood Kahn test, negative, and Kolmer test, 1+, icterus index, 18 units, serum bilirubin, direct, 2.2 mg per 100 cc, indirect, 1.2 mg per 100 cc, cephalin flocculation, 4+, thymol turbidity, 14 units, prothrombin time, 50% of normal, alkaline phosphatase, 9 King-Armstrong units. On Oct 26, the icterus index was 57, serum bilirubin, direct, 9.9 mg, indirect, 7.2 mg, serum cholesterol, 238 mg, and cholesterol esters, 68 mg, cephalin flocculation, 4+, thymol turbidity, 27 units, and prothrombin, 25% of normal. On Nov 10, the icterus index was 44, serum bilirubin, direct, 3.6 mg, indirect, 4.1 mg, cephalin flocculation, 3+ in 48 hours, thymol turbidity, 4 units, and prothrombin, 76% of normal. On Nov 30, the cephalin flocculation was 2+ in 48 hours, icterus index, 15 units, prothrombin, 94% of normal, thymol turbidity, 12.8 units, and serum bilirubin, direct, 1.8 mg, indirect, 1.10 mg. On Dec 15, the cephalin flocculation was 2+ in 48 hours, thymol turbidity, 9.4 units, icterus index, 11, prothrombin, 74% of normal, serum bilirubin, direct, 0.66 mg, indirect, 0.78 mg. On Jan 4, the sulfobromophthalein (Bromsulphalein) test showed 6% retention in 45 minutes (normal, 3% retention), cephalin flocculation, 1+ in 48 hours, icterus index, 10, thymol turbidity, 11 units, and serum bilirubin, direct, 0.22 mg, indirect, 0.76 mg.

CASE 6—A 60-year-old widow complained of pain in the hips of four years' duration due to degenerative joint disease of the hips. Her treatment had included vitamins given orally, local diathermy, and x-ray therapy. She had not, in the past year, received parenteral medication or transfusion. There was no known exposure to patients with jaundice or to hepatotoxins. Her history was noncontributory. Her intake of alcohol in recent years had consisted of two or three cocktails daily. Physical examination showed normal results except for marked restriction of both hips. On May 23, 1952, phenylbutazone was prescribed in a dose of 200 mg three times daily. Because of inadequate symptomatic improvement, the dose was increased to 200 mg four times daily on June 5. On June 15, the patient complained of nausea, vomiting, and upper abdominal pain, it was then that icterus was first recognized. Phenylbutazone was promptly withdrawn. Except for the icterus, physical findings were not remarkable. She was placed on a bed rest regimen and given a high carbohydrate, high protein, low fat diet and supplemental vitamins. Her subsequent clinical course was a stormy one. Jaundice progressed, reaching its maximum on or about June 28. On this date, the liver was palpable and firm. Although the jaundice receded during the next few weeks, her clinical course was manifested by severe nausea, emesis, and abdominal discomfort. On July 14, only slight icterus remained, however, spotty hemangiomas were noted over both arms, chest, and back. Pitting edema was present over both legs and the sacrum. The abdomen was distended and contained a massive amount of fluid. On July 22, 4,000 cc of amber-colored fluid was removed from the abdomen. From July 24 to Aug 13, she had repeated paracenteses. Hematemesis first occurred on

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Aug 7 and occurred repeatedly thereafter, necessitating multiple transfusions. Because of the increasing evidence of portal obstruction, manifested by repeated gross hematemesis and recurring ascites, a portocaval shunt was done on March 15, 1953, and a liver biopsy was obtained. The patient died in hepatic coma on April 4, 1953. Postmortem examination was not obtained.

Laboratory Data—On June 27, 1952, the hemoglobin level was 11.2 gm per 100 cc., red blood cell count, 3,600,000 per cubic millimeter; and white blood cell count, 12,500 per cubic millimeter with a normal differential count. On June 28, the cephalin flocculation test was 4+ in 48 hours, serum bilirubin, 8.4 mg., and icterus index, 43. On July 9, the hemoglobin was 10.2 gm erythrocytes, 2,950,000 per cubic millimeter, and leukocytes, 15,100 per cubic millimeter with 72% polymorphonuclear cells. On Aug 5, the serum protein was 5.7 gm., albumin, 2.6 gm., and globulin, 3.1 gm., and prothrombin time, 50% of normal. On Aug 11, the red blood cell count was 1,800,000 per cubic millimeter and hemoglobin 6.1 gm.

Sections of the specimen of the liver, obtained on March 15, 1953, showed an appearance of irregular nodularity, which may be interpreted as a toxic cirrhosis (i. e., nodular regeneration following an extensive hepatocellular injury). Irregularly rounded

There had been no exposure to recognized hepatotoxins. The temporal relationship between the administration of phenylbutazone and the onset of hepatitis was notable. Jaundice appeared 6 to 40 days after the ingestion of the initial dose of the drug. In five of the six patients, the use of phenylbutazone was not discontinued until icterus appeared. Emesis forced cessation of phenylbutazone therapy 10 days before jaundice occurred in the sixth patient (case 2). Other manifestations of toxicity of phenylbutazone were present in four of the six patients.

Pathological studies showed a toxic hepatitis, acute in the patient in case 1, less acute in the patient in case 2. In both cases, the hepatic lesions were characterized by cellular necrosis and portal inflammation in which polymorphonuclear leukocytes were fairly prominent. The pathology differed from that of viral hepatitis in that the inflammatory reactions were primarily about the fine portal radicles and the hepatocellular injury appeared less marked. Sections of the liver obtained from the patient

Data Concerning Patients with Hepatitis, Which Followed Ingestion of Phenylbutazone

Case No	Sex	Age Yr	Primary Diagnosis	Daily Dose of Phenylbutazone Gm	Days of Therapy	Days Between Start of Therapy and Onset of Jaundice	Other Manifestations of Toxicity of Phenylbutazone	Histological Findings	Result
1	F	78	Degenerative joint disease	0.8	40	40 (dark urine noted 10 days earlier)	Thrombocytopenia	Acute toxic hepatitis 20 days after onset of jaundice	Death in 20 days due to myocardial infarction
2	F	40	Bursitis	0.6	2½	13	Emesis duodenal ulcer	Subacute toxic hepatitis 27 days after onset of jaundice	Recovery in 12 wk.
3	F	62	Painful shoulder	0.8	22	22	Morbiform rash leukopenia		Recovery in 4 wk.
4	F	63	Degenerative joint disease	0.6	12	12			Recovery in 3 wk.
5	F	50	Degenerative joint disease	0.3	6	6	Morbiform rash		Recovery in 10 wk.
6	F	60	Degenerative joint disease	0.6	12	22		Toxic cirrhosis 40 wk. after onset of jaundice	Portal obstruction hepatic coma and death in 40 wk.

nodules of liver cells were separated by bands of fibrous tissue, which were infiltrated with lymphocytes and plasma cells (fig 3). At this time the liver cells were well formed and filled with glycogen.

COMMENT

All the patients whose cases are reported were women (see table). There had been no known antecedent liver disease except that of the patient in case 1, who had had jaundice for four days 59 years previously.

Isolated instances of hepatitis following ingestion of phenylbutazone have been recorded by others. It is generally agreed that the unpredictable occurrence of viral hepatitis makes its exclusion as a coincidental complication a difficult one. However, certain observations suggest strongly that the liver disease in the patients described here was that of a toxic hepatitis for which phenylbutazone was the major, if not the sole, contributory factor. None had had known exposure to persons with jaundice, none had received transfusions prior to the hepatitis, and none had received parenteral therapy within six months before the onset of hepatitis. All had been free of constitutional symptoms prior to the administration of phenylbutazone, with the exception of the patient in case 5, who had complained of rapid fatigue for eight months.

in case 6, 10 months after the onset of hepatitis, showed a toxic cirrhosis. Although this might follow any severe hepatocellular injury, its relationship with the administration of phenylbutazone cannot be ignored. It is concluded that phenylbutazone is potentially hepatotoxic, it follows, therefore, that hepatitis is another possible hazard in the therapeutic use of this drug.

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7 Steinbrocker O and others Phenylbutazone in Therapy of Arthritis and Other Painful Musculoskeletal Disorders J A M A 150 107 (Nov 15) 1952 Kuzell and others—

Tuberculous Meningitis—Three factors contribute to the unsatisfactory results that have been obtained in the treatment of tuberculous meningitis during the streptomycin era: mechanical obstruction of the circulatory channels of the cerebrospinal fluid by tuberculous exudate; the inability of antimicrobial agents to penetrate avascular tissue and reach tubercle bacilli buried therein; and the necessity of prolonged intrathecal therapy that may, of itself, produce local obstructions in the subarachnoid space by repeated irritation and trauma of the meninges. All the newer measures devised to counteract these effects—namely, anticoagulants, intrathecal injection of tuberculin, fibrinolytic enzymes and neurosurgical procedures—have met with equivocal success.—S J Shane M.D., and Clifford Riley, M.B., Ch.B., Tuberculous Meningitis Combined Therapy with Cortisone and Antimicrobial Agents The New England Journal of Medicine Nov 19 1953

Dr. Robert E. Engleman

1050

CEREBELLAR SIGNS

Robert Wartenberg, M D , San Francisco

As there are pyramidal signs that indicate disease of the pyramidal tract, so are there cerebellar signs that indicate disease of the cerebellum and its connections. While such cerebellar signs are numerous, many of them become manifest only when there is a marked functional defect of the cerebellum. When classical signs are evident, there is no need for special tests, the following signs may, however, reveal a cerebellar deficit in patients without obvious functional impairment or even without referable complaints. Patients with cerebellar lesions have been observed in whom these cerebellar signs were unmistakably present, however, until they have been rechecked on a large scale the last word on their differential diagnostic value cannot be spoken.



Fig 1—A, normal finger-to-nose test B, finger-to-nose test performed against resistance. Note intention tremor and hypermetria.

ATAXIA

Ataxia Against Passive Resistance—Examination for cerebellar function usually begins with the finger-to-nose test. The patient allows his arms to hang loosely at his sides. He is then asked to raise one arm slowly and to touch his nose with the tip of his index finger. The normal person performs this movement in a direct line. The manner in which some patients with multiple sclerosis, for instance, perform this test is familiar to all. Action starts normally, but increasing tremor develops as the finger approaches the nose. The finger finally comes to rest somewhere in the neighborhood of the nose. In such cases the marked cerebellar dysfunction usually becomes manifest in all casual movements of the patient, and special tests are hardly necessary. However, in cases in which disturbance of the cerebellum must be

assumed on other grounds the finger-to-nose test may be performed normally. The question then arises how the finger-to-nose test can be reinforced. There are methods to reinforce reflexes: the quadriceps reflex, for instance, by Jendrassik's maneuver or by slight innervation of the quadriceps muscle. The following method to reinforce the finger-to-nose test may make latent ataxia manifest even when there is no clear-cut clinical evidence of cerebellar dysfunction. The patient performs the finger-to-nose test against slight passive resistance. A rubber band is placed around the patient's wrist, and one end, held by the examiner, is pulled gently as the patient performs the finger-to-nose test. In a still simpler version, the examiner puts his fingers on the volar surface of the patient's forearm and exerts slight resistance while the patient moves his arm toward his nose. The ataxia then becomes manifest (fig 1). In figure 1A the patient performs the finger-to-nose test normally, as clearly shown by the light-tracer. In figure 1B the same movement is performed against the resistance of the examiner, who has placed his fingers on the patient's forearm. The light-tracer shows intention tremor and hypermetria. The patient fails to touch her nose and touches her brow instead. This case is one of olivopontocerebellar atrophy at a very early stage. Latent ataxia may similarly become evident in the lower extremity when the leg is moved against passive resistance.

Ataxia of the Lower Legs—With the following sensitive test ataxia of the lower legs can be seen earlier and is more easily demonstrable and more conspicuous than with the time-honored Romberg test. The patient, lying prone, is asked to flex his legs at the knee and to keep them vertical. In the presence of a lesion of the pyramidal tract, the affected leg tends to drop, if there is a severe pyramidal or lower motor neuron lesion, the lower leg drops instantly like dead weight. A normal person can hold his lower legs steady or with minimal oscillation in this vertical position. With the slightest ataxia, the light-tracer shows marked unsteadiness of the lower legs (fig 2). By this test not only cerebellar ataxia but ataxia of any origin can be demonstrated early and very clearly. In tabetic ataxia of the lower legs the oscillation of the legs is particularly marked. The static ataxic movements of the legs as shown by this test are more extensive than the swaying movements of the body as seen in the Romberg test.

DEVIATION

Arm Deviation—In a simple test for arm deviation the patient, standing or sitting, stretches his arms horizontally forward. He is asked to keep them still and to close his eyes. On the affected side the arm slowly deviates outward. In unilateral disease this deviation is constant, even when the test is made repeatedly. The sign is not absolutely pathognomonic for cerebellar disease. If there is such deviation the cerebellum may be involved, but not necessarily so, deviation may be absent when the cerebellar nuclei but not the cerebellar hemispheres are involved. The importance of an abnormal

finding in this test is that it may alert the examiner to a wider search for organic disease. Figure 3 illustrates the arm deviation. This is the same patient with olivopontocerebellar atrophy who showed intention tremor and hypermetria only when the finger-to-nose test was performed against resistance (fig 1).

Leg Deviation—In unilateral disease of the cerebellar hemisphere not only the arm but the leg as well shows a tendency to deviate outward. The patient, sitting on a chair, is asked to lift both outstretched legs and to hold them steady (fig 4A). He is then asked to close his eyes. When the test shows abnormality, the leg on the affected side slowly deviates outward. The patient is unaware of this movement. Figure 4B illustrates the outward deviation of the left leg. This patient with chronic cerebellar tremor also showed outward deviation of the left arm.

ABDUCTION

Abduction Tendency of the Arms—It is physiologically correct to say that in cerebellar disease there is a certain general tendency of the extremities toward spontaneous abduction. The typical stance of the patient with



Fig 2—Ataxia of the lower legs demonstrated by light-tracer

cerebellar disease, legs wide apart and arms abducted, may not be due completely to the requirement for balance but, in part, to the spontaneous tendency toward abduction, which is particularly marked in the arms. The best technique to demonstrate this is the following test. The examiner faces the patient, who is asked to allow his elbows to touch his sides with his forearms held horizontally in front of him. The index finger of both hands are held outstretched, parallel, and close together, the other fingers are bent. The examiner holds his own index fingers at the same level as the patient's, but about 10 in (25.4 cm) apart (fig 5A). The patient is then asked to draw his hands slowly apart and bring his fingertips opposite those of the examiner. This is done first with the patient's eyes open, then with the eyes closed. With open eyes, the maneuver is performed more or less accurately (fig 5B). With closed eyes, a normal person will not make any appreciable error in gauging distance. In the presence of a cerebellar lesion, however, the patient constantly moves both hands beyond those of the examiner, overshooting his mark. When the test is repeated the cerebellar patient overshoots the mark by increasing lengths (fig 5C). It is essential that this test be repeated

again and again. Only continual overshooting may be regarded as an expression of cerebellar dysfunction.

Abduction Tendency of the Legs—The patient in figure 6 is a young man with marked signs of multiple

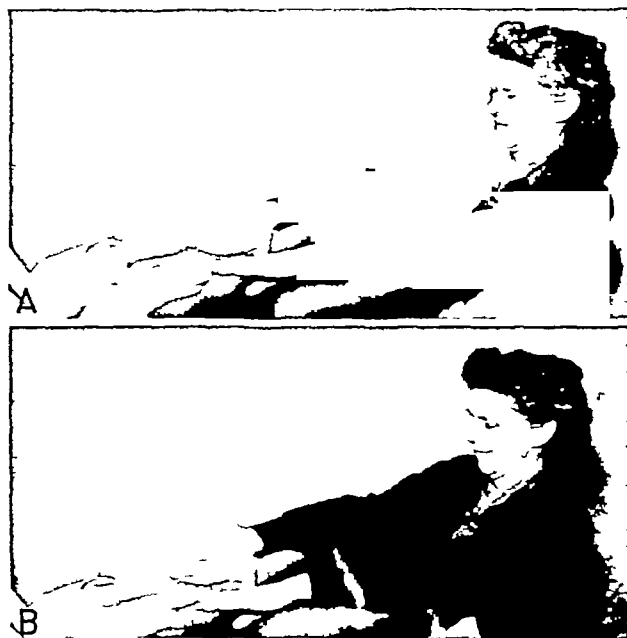


Fig 3—Arm deviation. A position at beginning of test. B position at end of test. Right arm deviates outward when the patient closes her eyes.

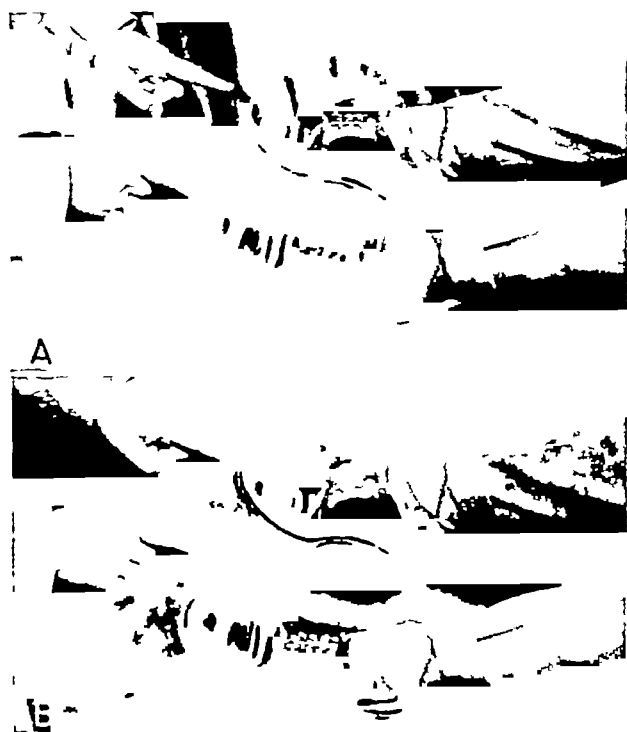


Fig 4—Leg deviation. A position at beginning of test. B position at end of test. Left leg deviates outward when the patient closes his eyes.

sclerosis, including cerebellar ataxia of the lower extremities. The lower legs of the patient, who is lying prone on the examining table, are brought to a vertical position either actively or passively. In this position they move sideways immediately. The knees remain in place

Abduction occurs in a stereotyped manner on repeated examination. The movement is in contrast to that seen in pyramidal or lower motor neuron lesions, in which the legs extend and fall straight downward. The side-wise movement of the legs in the presence of a cerebellar lesion is in conformity with the general tendency toward abduction in patients with cerebellar disease.

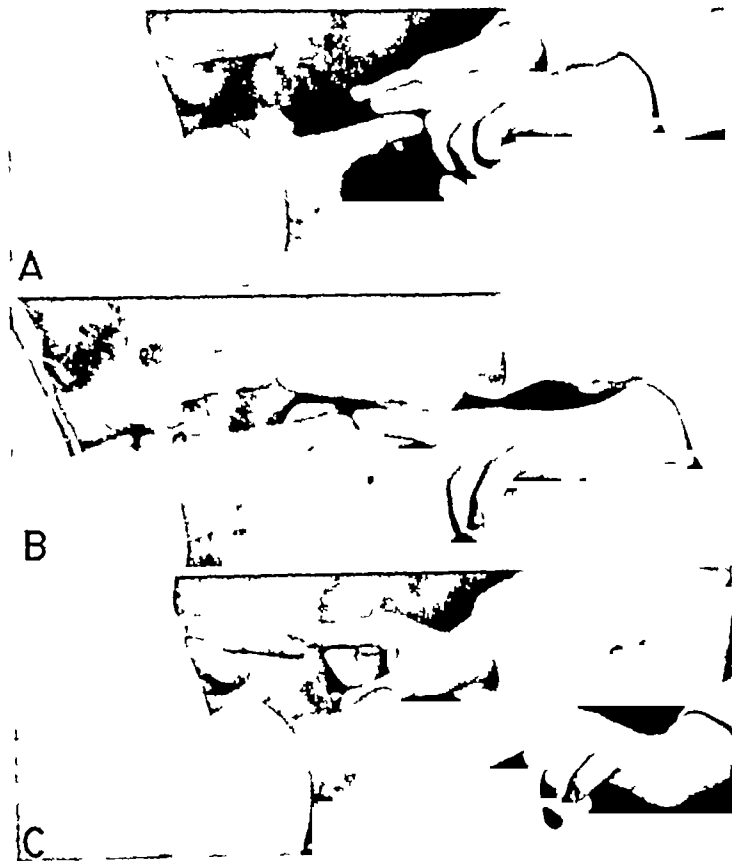


Fig 5—Abduction tendency of arms. A, position at beginning of test. B, with the patient's eyes open, the abduction maneuver is performed correctly. C, with his eyes closed, the patient overshoots his mark.

PENDULOUSNESS

Pendulousness of the Arms—It is universally known that in paralysis agitans (Parkinson's disease), a typical extrapyramidal disease, the degree of pendular movement of the arms usually seen in walking is diminished. In slowly developing, unilateral paralysis agitans this diminution constitutes a very early and valuable differential diagnostic sign. Less well known, however, is the established clinical fact that pendulousness of the arm is also diminished in homolateral disease of the cerebellar hemisphere.¹ This diminution is understandable physiologically, pendulousness of the arms in walking is not purely mechanical but is a complicated synergistic movement, and it is diminished or lost in cerebellar diseases, in which asynergia is the most outstanding feature. In tumor of the cerebellopontine angle with homolateral cerebellar signs, this diminution of pendulousness of the arm is so often seen and is so important a sign that it must be regarded as one of the striking clinical features. Oddly enough, it is not even mentioned in Cushing's² classical monograph on tumors of the auditory nerve. Thus, if a patient shows a diminution of the

pendular movement of one arm, this does not invariably mean that he has paralysis agitans; he may have a homolateral cerebellar disease. The distinction between a diminution of the pendulousness of the arm due to paralysis agitans and that due to homolateral cerebellar affection is easily made. The physiological mechanism involved in these two conditions is completely different.

In paralysis agitans pendulousness of the arm diminishes because of rigidity. Without rigidity there is no paralysis agitans. The usual examination of muscle tonus of the arm on passive movement easily shows this rigidity; the shoulder-shaking test is also useful. The examiner places his hands on the patient's shoulders and moves them to and fro with brisk alternate jerks. The range of arm-swinging is diminished on the side of the paralysis agitans. This diminution is also easily shown as follows: The patient, his feet separated, bends forward from the hips and allows his arms to dangle loosely without touching the trunk. The examiner applies an equal push to both arms simultaneously, and from the swinging time and range he can easily ascertain whether muscle rigidity exists and on which side. Quite different is the physiological mechanism in cerebellar disease, in which diminution of pendulousness on one side is due not to rigidity of the muscles but to dyssynergia, which is the dominant feature of cerebellar disease. When the patient walks, the arm muscles do not work synergically with other muscles of the body. There is no rigidity in cerebellar disease, on the contrary, there may be hypotonia. This lack of rigidity can easily be shown by the tests mentioned above. In the



Fig 6—Abduction tendency of legs. The patient is prone with lower legs flexed. The test shows a constant tendency toward abduction of the lower legs.

shoulder-shaking test both arms move to equal range, or this range may be even greater on the affected side. When the patient bends forward lack of rigidity can be shown by the normal, equal swinging of both arms.

Observing the swinging of the loosely hanging arms in a patient who is bent forward is helpful in diagnosing other conditions as well as in distinguishing a cerebellar

1. Wartenberg, R. Ein Kleinhirnsymptom. Deutsche Ztschr f Nervenheilkunde 116: 145, 1930. A Cerebellar Sign, J A M A 112: 1454 (April 15) 1939.

2. Cushing, H. Tumors of the Nervus Acusticus and the Syndrome of the Cerebellopontine Angle, Philadelphia, W B Saunders Company, 1917.

from a parkinsonian disturbance of one arm. When there is atrophy and hypotonia of the shoulder muscles, the affected arm swings longer and more widely. This is a completely objective and valuable sign.

Pendulousness of the Legs—It is astounding how much information one can gather from the simple observation of pendulousness of the legs. The patient sits on the examining table, his legs hanging loosely, the legs are lifted passively and allowed to swing. In paralysis agitans the swinging time is diminished very early and very markedly. In pyramidal lesions and in hypertonia in general, the swinging deviates from the sagittal plane,

and the movements are more circular. Any disease, wherever located, that decreases the tonus of the knee muscles increases the swinging time. Increase of swinging time caused by cerebellar hypotonia occurs in cerebellar disease, however, cerebellar hypotonia does not increase the swinging time as much as does a peripheral lesion. One should not expect too marked an increase of pendulousness in patients with cerebellar lesions. However, in cases of thrombosis of the posterior inferior cerebellar artery with cerebellar signs the increase of pendulousness on the affected side has been observed quite clearly.

TREATMENT OF SOFT TISSUE TRAUMA OF THE FACE

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In this modern, mechanical era, soft tissue injuries of the face are becoming more frequent. Physicians are daily faced with the problem of reconstructing mutilating lacerations from flying glass, avulsions from twisted steel, and abrasions filled with grease and dirt from the highway or roadbed. Such injuries demand meticulous care, for the penalty of inadequate management is visible and often grotesque deformity, with its inevitable physiological and psychological consequences. When life is threatened by the magnitude of injury the careful reconstruction of severe facial trauma can, and should, be temporarily set aside while the general physical condition is stabilized.¹ Deformity is accepted as a necessary evil, with the realization that reconstruction can be done at a later date. In most instances, however, when the facial injury is of primary concern, the final result of treatment is due entirely to the surgeon's adherence to the time-tested principles of wound management.^{1a}

MECHANICAL INHIBITION OF WOUND HEALING

The care of wounds and the many facets of wound healing have always been of paramount interest to the surgeon. The role of infection in the delay of healing and the production of dense and deforming postoperative scars is well known. The widespread use of antibiotic therapy, coupled with the relative immunity of the face to its normal oral and surface flora, lessens the problem of infection in facial wounds. Much has been written about the effects of age, general physical condition, and nutritional and hormonal imbalance on the healing wound. These factors are of little importance in the immediate therapy of facial trauma unless they contraindicate surgical repair, the medical correction of the infirmities of age and the protein depletion of nutritional and hormonal imbalance belongs primarily in the postoperative period. There are, however, certain purely mechanical factors that play a most important role in the healing of the wounds and must be kept in mind constantly during surgical therapy.

Devitalized Tissue—Every traumatic wound has a varying amount of destroyed tissue. This includes skin and subcutaneous tissue and, if the injury is severe,

muscle, tendon, and bone. If not removed, this tissue acts as a foreign body to interfere mechanically with wound healing and also becomes an ideal culture medium for pathogenic bacteria.

Foreign Bodies—The presence of any foreign body will slow the reparative process. In many injuries it is difficult to remove all the foreign bodies, but every effort should be made to remove all that are readily available. Unless this is done, the body tends to cast off this extraneous, foreign material with production of unsightly scarring.

Hematoma—One of the commoner mechanical inhibitors of wound healing is the subcutaneous collection of serum or blood. This may, from pressure alone, cause venous thrombosis and a delay or failure of tissue union. A hematoma may also organize and degenerate into a fluid-filled, cystic mass that requires surgical removal of the cyst wall. Hemostasis should be absolute to prevent mechanical interference with the healing of a traumatic facial wound.

Dead Space—In large avulsing wounds the loss of subcutaneous tissue acts as a deterrent to wound-healing. This open space rapidly fills with a serous exudate, which is an ideal culture medium and also prevents the raw-surface-to-raw-surface opposition so necessary for firm healing.

Tension—Mechanical tension at the suture line is one of the commonest causes of wound separation and is second only to infection as a cause of postoperative keloid or hypertrophic scar formation. The sutures act as so many tourniquets, strangulating the surrounding soft tissue and preventing the process of repair. If a wound cannot be closed without undue tension, some form of resurfacing procedure is essential.

Trauma—All too often the physician himself mechanically interferes with the normal processes of wound healing. The soft tissues, particularly those of the face,

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1. (a) Young F. The Care of Soft Tissue Injuries. New York State J. Med. 43: 1521-1526, 1943. (b) Altmeier W. A. Treatment of Fresh Traumatic Wounds, J. A. M. A. 124: 405-408 (Feb. 12) 1944.

are extremely susceptible to rough treatment. Gentleness must be the watchword of reconstruction if the postoperative result is to be acceptable. The use of small instruments and small suture material, care in hemostasis, and minimal handling of the traumatized tissue will be more than justified by the postoperative appearance.

GENERAL PRINCIPLES OF WOUND THERAPY

The surgical approach to acute traumatic lesions of the face is usually identical to that applied to soft tissue trauma elsewhere on the body. There are certain specific pitfalls and dangers, which will be discussed later, but the general principles of treatment remain the same for any soft tissue wound. A brief review of these principles is necessary before the specific variations can be noted.



Fig 1—Above, a 7-year-old girl who fell from a bicycle, striking the license plate of a parked car, 18 hours prior to repair. The laceration of the nose involved the nasal cartilages and nasal bones. The wounds were closed in layers with interrupted sutures of 000000 silk after total wound excision. Below, postoperative photographs taken six weeks after primary repair.

The ideal aim of surgical therapy of soft tissue trauma is to convert the accidental lesion into a clean surgical wound and then repair it. In this way the mechanical factors that inhibit or prevent wound healing can be avoided. While the creation of a surgical wound is not always possible, certain rules of therapy will closely approach the ideal if carefully and conscientiously followed.

Cleansing—Proper cleansing of a traumatic wound is essential. Many bacteriostatic and bacteriocidal agents enjoy widespread use as “mild” antiseptics, yet any agent powerful enough to destroy living bacteria may also traumatize the raw surface of a wound. Routine use of antiseptics within the wound is to be condemned, although

these same antiseptics may be valuable in the preparation of the surrounding, intact skin. All traumatic wounds should be irrigated thoroughly with isotonic sodium chloride solution to cleanse the wound mechanically. After thorough irrigation, the wound can be protected by sterile gauze and the surrounding skin cleansed with soap and the antiseptic of choice.

Débridement—The second step in the general care of soft tissue wounds is widely advocated but rarely practiced. The entire purpose of débriding a traumatic wound is to convert it into a clean surgical wound, yet all too often either the press of time or fear of creating additional deformity leads to the mere trimming of jagged, contused skin edges and removal of bits of fat, muscle, and bone that are obviously no longer viable. Total wound excision would perhaps be a better term for the correct procedure, since the word débridement has been associated with halfway measures. In many instances total wound excision is not only possible but preferable. The conversion of an irregular laceration to a simple, straight line gives a greatly improved final result, both functionally and cosmetically. If important anatomic structures are involved, total wound excision is not always practical, but débridement should still be thorough and as complete as possible.

Closure—The principles of closure of a traumatic wound are essentially the same regardless of the part of the body involved. Every attempt should be made to obtain a careful layer-by-layer closure. The best results are obtained by a meticulous approximation of all wound edges, using small suture material and small instruments.

Dressings—The postoperative dressing of the traumatic wound is almost as important as the original surgical repair. A good initial result can be preserved or destroyed by the dressing care a wound receives. A dressing should not only protect the sutured wound from external contamination but also promote healing by immobilization of the entire area. Putting injured tissue at rest increases its rate of healing, this is best done by a careful and adequate postoperative dressing. Immobilization can be accomplished by either a bulky dressing, which mechanically limits motion in the entire area, or localized splinting with plaster of Paris or collodion. Adequate immobilization also adds to the patient's comfort, since excessive motion of any injured area is painful, and obviates excessive scar tissue formation. One of the commonest defects in dressing care is attributable to the surgeon's natural curiosity. It is a temptation to change dressings often just to see “how things are doing.” The motion and mechanical irritation associated with frequent dressing change prolongs healing, adds to the patient's discomfort, and may increase postoperative scarring. Unless there is some specific indication such as pain, swelling, unexplained fever, or tenderness, there is no logical reason to change a comfortable dressing before removing the cutaneous sutures.

ADDITIONAL CONSIDERATIONS IN ACUTE FACIAL TRAUMA

The therapy of acute facial trauma depends not only on the strict application of the general principles of wound healing and wound management but also on the

elapsed time from injury to treatment, the type of injury, and the structures involved. Every traumatic wound of the face must be considered contaminated²; however, the mere fact that contamination is present does not mean that the wound is infected. A wound should not be considered infected until pathogenic organisms have invaded the normal, uninvolved tissue beyond the confines of the original area of trauma.³ If treated properly before this invasion occurs, a contaminated wound heals as readily as one made surgically. Many authors in the past felt that wounds of the face could not be primarily reconstructed if more than six to eight hours had elapsed since injury, but the use of antibiotic therapy, coupled with the excellent blood supply and relative immunity of the soft tissues of the face, has now lengthened the period of bacteriological safety (fig 1 and 2). Wounds may be left open as long as 24 hours, if the patient's general condition forbids earlier specific therapy, and primary surgical reconstruction then carried out, with atraumatic care of contaminated tissue helping to prevent the wide dissemination of pathogenic organisms. If reconstruction within a reasonable period of time is prevented, or if at the time of repair there is clinical evidence of localized infection, facial wounds may be allowed to heal secondarily, and the deforming scars may be revised when all evidence of infection has subsided and healing is complete. The treatment of soft tissue injuries of the face also depends on the type of injury. These may be classified into separate clinical categories, each with its own therapeutic variations.

Abrasion—This is the commonest and simplest of all soft tissue injuries. By definition, the wound does not penetrate the entire thickness of the skin, though it may be extensive, enough epithelial elements are present in hair follicles and dermal appendages to insure primary healing if the wound is handled properly. The main danger associated with abrasions of the face is the disfiguring traumatic tattoo. Carbon particles such as gunpowder, road dirt, or grease may remain permanently imbedded in the dermis. When epithelialization is complete, this foreign material gives a bluish discoloration to the skin that remains as a permanent disfigurement unless surgically removed (fig 2). Abrasions of the face are treated by thorough cleansing and irrigation with large amounts of sterile saline solution. If pigmented foreign material remains, it should be removed with a soft brush or carefully picked out with the point of a scalpel. The latter procedure may be time-consuming and tedious, but the results are well worth the trouble. When the wound is clean it should be covered by a simple dressing of petrolatum gauze. Epithelialization proceeds rapidly, and, unless the dressing is continuously disturbed and epithelium is destroyed, healing takes place with little or no residual scarring.

Contusions—The contused injury, a very common type, is the result of blunt force. The surface epithelium is not broken, but instead the force is transmitted into the subcutaneous and deeper structures and ruptures the underlying blood vessels. Hematoma develops rapidly and, by pressure alone, may devitalize the overlying skin. Treatment is the prevention of hematoma formation

the acute phase a simple compression dressing is sufficient. If the hematoma has already formed, however, it must be removed either by aspiration or by evacuation.

Lacerations—The next commonest traumatic injury of the face is the laceration. It may be the result of a sharp instrument such as glass, but often there is an associated element of contusion or abrasion, particularly in the extensive injuries. There may be extensive devitalization of the skin, subcutaneous tissue, and muscle. Nerves may be severed and deeper structures involved with associated loss of function. The treatment of lacerations of the face is often time-consuming. All wounds should be irrigated gently with saline solution and then protected with gauze while the surrounding skin is cleansed with a mild, colorless antiseptic. Facial wounds



Fig. 2—Above: extensive avulsing injury of the face following accidental dynamite explosion. There are extensive abrasions and traumatic tattooing of the entire face as well as contusions of the ear and eyelids. The patient's general physical condition did not allow primary reconstruction until 22 hours after injury. Below: the patient one year after careful and complete débridement and primary closure. Total wound excision was not feasible as it would have necessitated sacrifice of the facial nerve. Powder and dirt was removed with a soft brush and a pointed scalpel.

should be thoroughly explored for foreign bodies, and traumatized skin and devitalized deeper tissue débrided. Small straight and curved lacerations can be excised completely and converted into surgical wounds (fig 3). Extensive wounds often cannot be excised because of the involvement of important structures, but débridement should be as thorough as possible. When débridement

2. B	Treatment	Skin and S
Tissues	Obs. 72	
3 (a)	Principles	Plastic Sur
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THE DILEMMA'S HORNS

BASIC SCIENCE AND THE CLINICIAN

CHAIRMAN'S ADDRESS

Irvine H Page, M D , Cleveland

The dilemma, so called from the resemblance of its presenting bony parts to an archaic and discarded Greek letter, is a widely distributed, undomesticated, and sometimes ferocious creature. One reads and hears frequently of persons who have been caught on the horns of one. The species I would discuss is the common dilemma of medicine. It has a ferocity all its own. On one of its horns rests, uneasily, basic science and on the other, confidently, clinical medicine, the dilemma relates the two.

THE PROBLEM

I suppose most younger clinicians are only vaguely aware that bedside medicine and basic science have for years wondered what each had to do with the other. Most of the older ones think basic science at least a doubtful part of medicine and act as though it were a menace, with no other purpose than to obfuscate the practical management of patients. Basic scientists in turn consider clinicians woolly minded but amiable souls who want to do research in absentia. Somehow, also, the teaching of basic science and the practice of research have become so intertwined that many trustees of medical schools view both as an unnecessary burden on the already burdened budget of the schools. Nobel prizes in the most basic of basic sciences are being won in hospital laboratories, and yet nobody has decided either how to support these investigators or, for that matter, even what to call them. The specialty board examiners add to the din by requiring students to answer some pretty searching questions concerned with basic science, many of which most practicing physicians of an older vintage could scarcely answer. The surgeons want basic science tailored to what they believe their needs—a basic science that seems to be something quite different from the ophthalmologists' or the internists' variety. All of these groups have concrete ideas about what is best for their specialty. Since physicians rest uneasily on the horns of the common dilemma, the nature of the beast must be more closely examined.

The problem seems to have been forced on physicians by (1) the phenomenal growth of science, on which the practice of medicine is based, (2) the growing complexity of clinical medicine itself, (3) the great growth of interest in, and recognition of the importance of, research, (4) the positive chemotactic action on scientists of the large amounts of money currently available for medical research.

Passing from one good and convivial dinner to another, one likes to think one can shake off the whole problem of the relationship of basic science and clinical

medicine and go back to training physicians with no further nonsense, good practical physicians who give the right pills and get patients well. Along with the gray dawn of morning comes the realization that the basic science problem just "hasn't shook." I should first make it clear that when I refer to basic science I do not necessarily mean the "laboratory" in its usual sense. Too often the test tube has come to symbolize a laboratory test with its clinical interpolation rather than the broad connotation of the principles of basic science. This is not a discussion of the "laboratory" versus the "bedside."

STRUCTURAL PRINCIPLES

All physicians had to study organic chemistry once. Hundreds of thousands of compounds have been synthesized since early in 1813, and yet, as a group, the organic chemists show no signs of being unduly bewildered by this haphazard constellation of complex organic structures. This is due to the fact that certain structural principles were adopted and adhered to relatively early, and, indeed, documented in that most remarkable set of books known as "Beilstein," which provide the guidelines from the "basic" knowledge to the "practical" production of compounds. The transition was smooth because only seldom did the notion of a division of their discipline into "basic" and "operational" occur to anyone. In contrast, medicine grew up plagued with departmentalization, which has erected barriers to the free flow of knowledge, and, worse, it has developed no organizing principles comparable with those of the organic chemist's with which to find one's way among the clutter of facts. Like a juggler, a physician is forced to keep as many facts as possible whirling around in his head and not drop too many during his act. Unfortunately, as the reflexes get older, the juggler finds it increasingly difficult to keep the facts he already has, much less add more to the swarm. My professor of organic chemistry at Cornell, Dr. Orndorff, once told me it was not how much organic chemistry I knew that counted but how much I knew about where to find what I wanted to know.

But medicine needn't continue its wastrel ways. Into medical teaching can be introduced organizing principles that will take care of many current difficulties. Medical knowledge can be systematized so that, starting with basic components and organizing them, a structure results that can be analyzed in terms of the same components and principles. The phenomenal growth of organic chemistry was made possible by early recognition of the high importance of the basic units—carbon, hydrogen, oxygen, and nitrogen. Dissimilar compounds became analyzable in terms of these basic units. By recognizing the organizing forces of valency, molecular size, shape, and position, resonance and such, the broad pattern of interrelationship of organic compounds was discernible.

AN EXAMPLE

The basic components of medical knowledge are water, electrolytes, oxygen, lipids, proteins, and carbohydrates. With organizing principles, working through certain mechanisms, the animal body can be compounded of these, and, in these terms, it can also be analyzed. Let me take an example from the routine of medical practice. A patient is suffering from extensive arteriosclerosis for which methods neither of diagnosis nor treatment are known. How does the clinician start thinking about the disease at all, to decide what to do and what not to do? As I would have it, the principle basic elements concerned are lipids and proteins derived from food (nutrition) and from endogenous synthesis (biochemistry-enzymology). The lipids become organized into lipoproteins (physical chemistry) and are transported across blood vessel walls where they may meet with obstruction because of the structure of the vessel (histology-anatomy), transport is also influenced by the kind of filter bed (heredity-anatomy) and lateral arterial pressure (physiology). Intramural capillary hemorrhage (pathology) and turbulence in the blood column at sites of vessel branching or anatomic abnormality, such as patent ductus arteriosus (biophysics), may predispose to lipid deposition. Fibroblastic and ground substance reactions finally determine the fate of the vessel (embryology-chemistry). Age, sex, diet, and heredity (clinical aspects) constitute the factors conditioning the substrate on which all these operate to produce atherosclerosis.

Here, in simple form, is the essence of the problem of arteriosclerosis. Both the basic components and organizing lines are clear, though greatly in need of being extended. New knowledge may be added without loss of simplicity. It tells the clinician why dietary control limited to cholesterol alone would be unsuccessful. It tells him why plasma lipoproteins are the center of so much discussion. It tells him why hypertension will increase the severity of arteriosclerosis, but most important, it provides a logical approach to the solution of a problem, a problem of the sort clinicians face every hour of the day. Knowledge has been drawn from both the clinical and basic sciences, but distinctions between them have not been made. In short, the solution of a problem, insofar as current knowledge allows, has been achieved by reorientation of a hodgepodge of knowledge derived from widely different disciplines.

FUNCTIONAL NEEDS

If the solution of problems is the primary function of a physician then it would aid him in his training if the problems the body has faced and solved were taught to him. The body has functional needs, and these must be satisfied. For example, the need for water is evident, and it must be kept in just the right amount. Given that need, how does the body go about organizing the solution of the problem? To mention but a few of the parts of mechanism set up to control the water content of the body: (1) thirst, (2) salt metabolism, (3) osmoreceptors in the midbrain, (4) pulmonary loss, (5) intra and extracellular space and their control, (6) the kidneys, and (7) the blood pressure developed by the heart. All of the varied parts of the mechanism are concerned with the homeostasis of water. Viewed as a whole, having de-

veloped as a part of emergence from the sea, the body has solved the problem of water conservation in an entirely logical and understandable fashion. Without understanding of the basic mechanisms and why they are so contrived, the student's mind is left with little on which to build. Deviations from this orderly mechanism are caused by disease, and often the same signs appear as a result of deviations superficially quite different in nature, edema may be of renal, cardiac, or merely dietary origin, but is all part of the mechanism regulating water.

Knowledge organized in such a way as to trace from the original chemical units of protoplasm the way in which nature has solved the problems of the functional needs of the body provides an intellectually economical schema that is just as usable at the bedside as in the classroom of the basic sciences. By being taught to think the same way in both branches of medicine, clinical and basic, the void

Synthetic and Analytic Channels and Their Association with Health and Illness

Organizing Principles	Basic Components	(Mechanisms)	Products
The Well Man			
Synthesis			
Cells	Growth Reproduction Steady state Adaptation	Water Electrolytes Gases Protein Carbohydrate Lipid	Surface phenomena Osmosis Oxidation Enzymes Energy release
Body	Orientation Growth Reproduction Homeostasis Adaptation		Gas exchange Energy control Hormones Accessory substances Immune reactions Nervous and humoral Integrative action
Man	Biologic Philosophical Socioeconomic Cultural Religious	Mammalian organization	Integration of somatic and psychic function
The Sick Man			
Analysis			
1. Illness is disorganization at any level in the synthetic channel.			
2. Diagnosis is made by analysis of the disordered functions to locate the level and channel of the disorder.			
3. Therapy is rational reestablishment of the disordered channel.			

between the two can be bridged, the "common dilemma" has in these terms provided the means of relating the one with the other. Perhaps it is well, at times, to be caught on the horns of a dilemma in order to be shown the essential oneness of problems that at the onset seem to be multiple and widely disparate.

SYNTHESIS AND ANALYSIS

Perhaps this plan for organization of thinking may be further clarified by making it more specific. This I have done in a table that shows the channels of synthesis that finally are expressed as the well man. In reverse, analysis is associated with the sick man, illness is disorganization at any level in the synthetic channel. The principles of organization, utilizing the basic components, through the mechanisms, yield the final products. These synthetic channels operate at three levels: the cell, the body, and the man. Before modern methods of isotope analysis were introduced, the constant turnover and rebuilding of

the body was not known. It seemed a static affair, once built it remained the same, and the need for the synthetic channels would largely have disappeared. With introduction of the dynamic concept, the need is, on the contrary, constant. When, for example, chemical reactions involving about 16 lb (7.3 kg) of sodium chloride a day occur in the body, channeling obviously must occur. Under such circumstances it takes little disorganization of these channels to produce illness.

If this logical structure is accepted, the teaching of medicine becomes grounded on learning the nature of the basic components—carbohydrate, lipid, protein, gases, electrolyte and water—how they are organized through different stages of complexity into the human body, how nature has solved the problems of the body's

functional needs, and finally how they are deviated from the normal by disease. At the bedside, clinical medicine becomes the solution of problems in these same terms. The anathema of further intellectual departmentalization, the miserable current failure of integration of basic science and clinical medicine, and the growing and altogether overwhelming complexity of the factual aspects of medicine may so be dissipated. While I plead for the union of basic science and medicine, by the provision of this logical inner structure to uphold and allow the union to grow, those treasures of human thought and emotion that keep medicine a profession rather than a technology, should be embraced. The physician must continue to be that rare combination of scientific skepticism and human compassion to be worthy of this trust.

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EVOLUTION, REVOLUTION, AND BOARD CERTIFICATION—1932 TO 1954

CHAIRMAN'S ADDRESS

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Evolution plays an important role in medicine as in all other phases of life, however, changes in the medical field during the past 30 years have been so profound and so far reaching as to be revolutionary in scope. In many directions this has made available methods for detection of minimal evidence of disease, the ramifications of disease processes have been more clearly defined, and many patients have been salvaged from the category of incurable. The development of new methods of diagnosis, better means for prevention of disease, and of more rational, and often specific, therapeutic procedures poses a challenge to the medical profession. Translation of these modern and continuing advances in knowledge to practical application has not always followed closely, since this is dependent mainly on the availability of physicians with long-term, graduate education leading to the development of special skills and of mature judgment. There is, moreover, often a variation in the quality of medical care depending on the density or sparseness of population, on economic factors, and particularly on the educational status of a community. This problem of providing for more even distribution of superior medical care is a major one in medicine today. With these thoughts in mind it is of importance to trace the growth of specialization and the influence exerted by the specialty boards.

PUBLIC ATTITUDE TOWARD SPECIALIZATION

The general public today is much more enlightened in regard to progress in medicine than their counterpart of three decades ago. This is largely because of informative material in newspapers, magazines, radio, and television. Some of the material is prepared and disseminated by the medical profession and by medical agencies, but much is the work of lay workers, some of whom devote their professional careers to this field. Cancer, heart disease, and

diabetes have been widely discussed. This has resulted in a trend toward self-diagnosis and a desire to share in the decision regarding therapy. The logic of certain diagnostic or therapeutic measures may be perfectly apparent to the physician, but he may meet resistance from a patient unless the measures conform to the information the patient obtains from his favorite columnist. Most patients do not look for miracles from a physician, but they do expect honesty, frankness, and a modicum of skill. Furthermore, they expect fewer mistakes in diagnosis and faster results from therapy if they consult someone who is devoting his entire energies to a particular field. Thirty years ago the desire for specialist care was less apparent than now and was satisfied by comparatively few specialists. While specialists at that time were consulted directly by patients, they were also utilized as consultants by general practitioners to assist in the diagnosis of obscure diseases and in the treatment of patients with unusual or recalcitrant disorders. This approach was helpful only to a small percentage of the general public and, while of help in cases of great complexity, could in no sense be considered a definitive and permanent solution. There has been a gradual realization that in medicine, as in other human endeavors, increasing knowledge must lead to particularization of effort. No lawyer or engineer today could hope to master all the ramifications of his field. The same holds true for a physician.

RESPONSE OF PHYSICIANS

While at first specialist care in medicine was considered useful only in cases of severe, disabling, or life threatening illness and injury, it has become apparent that other less vital, but frequently troublesome, disorders also yield more readily to the expert approach. Physicians, aware of their deficiencies, have increasingly sought and obtained the necessary instruction so that they might become proficient in a limited field of medicine. It is of interest to note the gradual evolutionary tendency to numerical and percentage increase of specialists in the United States.

From the Department of Medicine (Dermatology) New York Hospital and Cornell University Medical College.

Read before the Section on Dermatology and Syphilology at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

during the years 1923 to 1943 (table 1) The pattern was one of gradual expansion, with approximately 1,250 new specialists each year In sharp contrast, during the seven years between 1944 and 1950, inclusive, over 25,000 specialists were approved as competent by the various boards This meant that about 3,500 physicians were admitted each year to specialist category, or at approximately three times the former rate The reasons for this extraordinary condition are various It is true that the general public has demanded better medical care, not only as individuals, but also through interest in hospital centers Even in a small community there is increasingly critical appraisal of the credentials of physicians Physicians who served in the Armed Forces during the second world war were encouraged to seek additional training, either by refresher courses or in long-term training programs, by the government policy of monetary support (G I Bill of Rights) They had observed that the armed forces stressed specialist care of patients and could visualize the advantages, not only in pay, but also in the more rapid cure and over-all satisfaction from more knowledgeable handling of the injured and the ill The overwhelming demand for graduate training might be considered revolutionary, since it was a mass movement

TABLE 1—Approximate Number of New Specialists of All Categories Per Year from 1923 to 1954

Period	No of Yr	No of New Specialists	No per Yr
1923-1931	8	10 400	1,300
1931-1943	12	10 000	1,250
1943-1950	7	25 000	3,600
1950-1954	4	5 000	1,250
Total or average 1923-1954	31	50 400	1,600

in the sense that Webster defines revolution as a "total or radical change" Since 1950 there has been a return to a gradual increase in specialists at the level of approximately 1,250 per year, although the time interval is too short to establish that this is a definite trend At this time there are approximately 155,000 physicians in active practice in the United States, this being about three-fourths of all registered physicians Over 65,000 physicians are practicing a specialty, and most of these are certified as competent by one of the specialty boards In addition there are 20,000 physicians who are "interested in a specialty" Approximately 70,000 physicians are in general practice

DISTRIBUTION OF CERTIFIED SPECIALISTS IN DERMATOLOGY

It was not too long ago that specialists were to be found in only the larger cities This is no longer true, and there are few, if any, cities in which specialists of all categories are not to be found There are 43 cities in the United States in which five or more certified dermatologists are practicing (table 2) Only 31 cities were in this category in 1947 These 43 cities have a total population of 33,747,868 (1950 census) and support 812 certified dermatologists or 1 dermatologist to 41,561 persons The remaining 116,949,493 persons in the United States have access sometimes remote, to 526 certified dermatologists or 1 dermatologist to 222,337 persons This obviously represents inadequate coverage if the same standards of dermatological care are to prevail in all

sections of the country In a paper read before the Section on Dermatology and Syphilology in 1948¹ analysis was made of the distribution of dermatologists in the United States It is of interest to compare the statistics at that time with those of five years later, and to note a substantial increase in all sections of the country The increase from 852 dermatologists in 1948 to 1,338 in 1953 is 57% The total number of specialists who had been certified in dermatology by Dec 31, 1953 was 1,573 The difference between this and 1,338 represents

TABLE 2—Distribution of Dermatologists in Cities with Over Five Certified Specialists (1953)

City	No of Certified Specialists	Population (1950)	Per Capita Distribution
New York	237	7,530,099	1 33 009
Chicago	50	3,606,430	1 64 400
Philadelphia	43	2,664,794	1 48 018
Los Angeles	42	1,956,607	1 47,390
Boston	38	790,563	1 28,240
Washington D C	28	797,670	1 28,488
Detroit	22	1,838,517	1 83,268
Cleveland	22	900,636	1 41 160
San Francisco	22	760,703	1 34,579
St Louis	17	832,623	1 50,154
Pittsburgh	16	673,763	1 42,110
Cincinnati	15	600,510	1 33,367
Newark N J	15	487,837	1 29,190
Houston Texas	14	204,321	1 42 451
Baltimore	14	940,200	1 67 107
New Orleans	14	567,257	1 40,518
Denver	12	412,856	1 34 404
Buffalo	11	577,303	1 52 490
San Diego Calif	11	321,400	1 29,220
Milwaukee	10	632,651	1 63,265
Dallas Texas	10	432,927	1 43,292
Seattle	10	462,440	1 46,244
Minneapolis	10	517,277	1 51 277
Oklahoma City	10	242,450	1 24,245
Oakland Calif	10	820,576	1 38 007
Miami Fla	8	246,983	1 30 572
Indianapolis	8	424,683	1 53 600
Pateron N J	8	189,423	1 17 427
Omaha	7	247,468	1 30,344
Portland Ore	7	371,011	1 53 001
Atlanta Ga.	7	327,090	1 46 727
Phoenix Ariz	7	100,442	1 10 063
San Antonio Texas	7	406,511	1 58 115
Kansas City Mo	6	433,297	1 73,548
St Paul	6	309,474	1 51,579
Albany N Y	6	134,990	1 22,499
Long Beach Calif	6	244,072	1 40 678
Syracuse N Y	5	220,067	1 44 013
Birmingham Ala	5	220,730	1 59 744
New Haven Conn	5	163,344	1 32,663
Wichita Kan	5	160,300	1 33,261
Elizabeth N J	5	112,000	1 22,400
Dayton Ohio	5	213,100	1 48 221
Total	812	33 747 868	1 41 561

diplomates who were not reported in private practice in the United States in the 1953 edition of the "Directory of Medical Specialists" Whereas in 1948 there were eight states with no dermatologist, today only one state, Wyoming, is without such representation When the individual states were surveyed, it was noted that in 1948, only two states and the District of Columbia had a per capita distribution of more than 1 100 000 In table 3 it will be noted that eight states and the District of Columbia now enjoy this advantage On the other side of the ledger, there are 18 states in which the per capita

1 Seneff F E Lewis G M and Corbin F E. Present Status of Dermatologic Training in the United States Arch Dermatol & Syph 60: 75 (Oct) 1949

distribution is less than 1 200,000, and it is in these states that the problem of providing adequate dermatological care is obviously the most pressing

From a consideration of data it would appear that a dermatologist will survive economically if he receives

TABLE 3—*Distribution of Dermatologists by State and Geographic Divisions (1953)*

Section and State	No of Certified Specialists	State Population (1950)	Per Capita Distribution
New England			
Maine	1	613,774	1 613,774
New Hampshire	3	533,212	1 177,747
Vermont	2	377,747	1 188,873
Massachusetts	51	4,690,514	1 91,068
Connecticut	27	2,007,280	1 74,346
Rhode Island	6	791,890	1 131,982
Total	90	9,314,463	1 103,493
Middle Atlantic			
New York	319	14,830,102	1 46,469
Pennsylvania	97	10,498,012	1 108,226
New Jersey	63	4,835,329	1 74,389
Total	481	30,163,633	1 62,710
South Atlantic			
Delaware	3	318,653	1 106,028
Maryland	15	2,313,001	1 156,200
District of Columbia	28	802,178	1 28,619
West Virginia	5	2,005,552	1 401,110
Virginia	15	3,318,680	1 221,245
North Carolina	15	4,001,020	1 270,705
South Carolina	6	2,117,027	1 352,837
Georgia	12	3,444,678	1 287,018
Florida	21	2,771,305	1 131,066
Total	120	21,182,335	1 176,619
East North Central			
Wisconsin	17	3,431,575	1 202,033
Michigan	37	6,371,766	1 172,209
Illinois	82	8,712,176	1 106,246
Indiana	19	3,034,224	1 207,061
Ohio	65	7,916,627	1 122,255
Total	220	30,399,368	1 138,178
East South Central			
Kentucky	6	2,914,806	1 490,801
Tennessee	13	3,291,718	1 253,209
Mississippi	3	2,178,914	1 76,304
Alabama	9	3,001,743	1 340,103
Total	31	11,477,181	1 370,231
West North Central			
Minnesota	22	2,982,483	1 135,567
Iowa	10	2,021,073	1 202,107
Missouri	31	3,854,653	1 127,569
North Dakota	2	619,636	1 309,818
South Dakota	2	652,740	1 320,370
Nebraska	8	1,325,610	1 165,648
Kansas	14	1,905,299	1 136,092
Total	89	14,061,391	1 157,993
West South Central			
Oklahoma	13	2,233,351	1 171,796
Arkansas	4	1,909,511	1 477,627
Texas	60	7,711,194	1 128,519
Louisiana	15	2,683,516	1 178,901
Total	92	14,637,672	1 158,017
Mountain			
Montana	1	591,024	1 591,024
Idaho	1	588,637	1 588,637
Wyoming		290,529	
Nevada	3	100,083	1 53,361
Utah	5	688,862	1 137,772
Colorado	15	1,320,089	1 88,339
Arizona	9	740,587	1 89,287
New Mexico	4	681,187	1 170,296
Total	38	6,074,998	1 158,652
Pacific			
Washington	18	2,378,963	1 132,164
Oregon	9	1,521,341	1 169,037
California	150	10,586,223	1 70,674
Total	177	14,486,527	1 81,844
Total for United States	1 338	160,697,361	1 112,629

support from other physicians in a community of from 30,000 to 40,000 population and in many instances in even smaller centers. The patient with a recalcitrant or disabling dermatosis may travel a considerable distance for help, and patients tend to gravitate to a large center of population. These are factors that have not been considered, since they do not lend themselves to accurate

analysis. It is of interest that on many hospital staffs and in large group clinics there is need for at least one dermatologist to each 40 physicians. This same ratio holds true when the number of certified dermatologists is divided into the total number of specialists certified by all the boards.

ROLE OF THE SPECIALTY BOARDS

It might be appropriate to discuss briefly the specialty boards. How did they come into being? What was their purpose? What have they accomplished? Prior to formation of the certifying boards in the various specialties, there was no recognized standard to ensure the public that claims to special knowledge by a physician were legitimate. The licensing requirements by the states demanded only the minimal knowledge that graduates of first-class medical schools usually had no difficulty in demonstrating, however, there was no provision to test the particular knowledge and judgment of persons who were purportedly medical specialists. With the increasing numbers of physicians specializing in the various medical fields, the desirability for some regulatory scheme became self-evident. Since there was no mechanism available through existing organizations, it is to the credit of specialists within the medical profession that they established voluntary examining bodies in their own fields. It should be emphasized that this whole movement was and is independent and self-motivated, being established and perpetuated within the medical profession itself, and it has not been controlled by the state, by universities, or by any preexisting lay or medical organization.

Development—The first specialty certifying board was the American Board of Ophthalmology, which was created in 1916. The next two boards were the American Board of Otolaryngology and the American Board of Obstetrics and Gynecology, established in 1924 and 1930, respectively. The fourth board was the American Board of Dermatology and Syphilology, founded in 1932. These four boards, together with the Association of American Medical Colleges, the American Hospital Association, the Federation of State Medical Boards of the U. S. A., and the National Board of Medical Examiners joined together to form the Advisory Board for Medical Specialties on Feb. 11, 1934. Since then, 14 other specialty boards have been organized and have been admitted to membership in the advisory board. In addition, there are nine sub-specialty boards. The advisory board, as its name implies, is a loosely knit body, with no power to make decisions binding on its individual members. It holds an annual meeting at which timely topics currently of interest to specialists are discussed. It also has the authority to admit to membership new specialty boards if such are deemed necessary. The Council on Medical Education and Hospitals of the American Medical Association has cooperated wholeheartedly with both the advisory board and individual boards, to their great benefit.

The various boards began as independent units and have so remained. It will help to understand the functioning of a board if it is kept in mind that it is comparable to a judicial organization. The board is composed of members designated from sponsoring societies. Once elected, the members are responsible only to their own consciences. This independence is highly desirable and

obviates the possibility that a board might become a political football. It should be stated that, since the members of a board have the confidence of sponsoring societies and since no individual member has more than executive power, no fear need be felt that board decisions will be biased or discriminatory. The boards have found it advisable to insist on certain basic and minimal training requirements that candidates for the examination must satisfy. Since conditions of practice in the different specialties often present problems peculiar to that group, it is not surprising that individual boards exercise considerable variations in their activities. Moore² recently reviewed some of the discrepancies in requirements and in the functioning of the boards. These variations in individual boards are minor, are usually based on sound reasoning, and represent the judgment of thoughtful men.

Professional Standards—The boards were established to determine competence of candidates. In exercising their right to establish the "ground rules" under which they could operate, they have also become a potent force in raising professional standards. For instance, at times the minimal standards established by a board were higher than existed in an institution undertaking to provide graduate training. This resulted either in withholding approval of the institution or in deficiencies being remedied. At times, also, this led to criticism of the boards as interfering with the function of an educational body. This would be true if the boards made ironclad rules with conformity to a pattern as requisite to approval. The American Board of Dermatology and Syphilology, like most, if not all other boards, allows great latitude in the performance of an institution, while requiring that graduate students in that institution be given the opportunity to learn all phases of the specialty. One can see how misunderstandings and nonconformity to regulations can result in friction. The very nature of an examining body indicates that not all candidates will be found qualified. Not all those rejected accept the decision of the board as equitable. Chiefs of hospitals that have been refused approval as adequate for graduate training seldom believe the decision is motivated by clear thinking. And heaven help the board with the temerity to remove from the approved list an institution that had previously qualified! In spite of these and many other difficulties, the vision of those responsible for the formation and conduct of the boards has been amply demonstrated.

The boards have been criticized as responsible for the fostering of monopolistic practices. One of the most frequent sources of dissatisfaction concerns the selection of staff members for a hospital when the institution requires board certification for appointment. This has resulted occasionally in unfair treatment of physicians eminently qualified but who, for one reason or another, have never been certified. No one can deny that a lay board of governors of a hospital might be rightfully impressed by certification as indicating high qualification, and it is true that the onus of proof might well be on a noncertified applicant for a hospital position to demonstrate his competence. However, once competence has been proved, either through long service or otherwise, discrimination against him as noncertified cannot be justified. The board certificate should never be used as a weapon. For details of the everyday functioning of a

board, the reader is urged to read the article by Braceland and Boyd.³ Written in a humorous vein, it portrays vividly the active life and the vicissitudes of the secretary and therein the problems, great and small, that confront, and sometimes confound, the members of these organizations. Recent publications by Watson⁴ and by Schnabel⁵ also are informative.

RESPONSIBILITY FOR GRADUATE MEDICAL EDUCATION

Recent exhaustive surveys both in the field of premedical⁶ and of medical⁷ education indicate a wide divergence in colleges in both content and method. There would appear to be a definite trend toward a "balanced education" and a strong feeling that the physician should have a broad and liberal education with less emphasis on science in the premedical years and with cultural subjects receiving more attention. There is considerable agitation to shorten the total period of education for the physician. No unanimity of opinion appears possible as to just when this retraction in time should occur, except that everyone concerned believes it should happen in some period other than the one in which he is personally interested. Adding to the difficulty is the growing realization that, for a physician to be strongly equipped to take his place in the medical community, long-term graduate training is almost essential. Hospitals and medical colleges offering graduate instruction were unprepared for the heavy demand for specialty training immediately after World War II. This urgent request for instruction became a challenge to institutions that had not heretofore had experience in the field of graduate medicine. This was at a time when the staffs of the undergraduate medical colleges were just recovering from the wartime accelerated program. There was some hostility to the insistence by the boards that appropriate basic science subjects must be taught. Some misunderstandings arose over the implementation of these requirements. The boards were occasionally accused of assuming an unreasonable or dictatorial attitude.⁸ In general, however, this and other actions of the boards helped materially to elevate standards and to protect graduate students from being c

Hospitals of the A M A or by many of the boards. It is also true that some hospitals with no medical college affiliations are, nevertheless, able to carry out a satisfactory program, and that their graduates are able to compete favorably with those trained in hospitals closely affiliated with a medical college. Basically, the reasons for existence of a hospital and of a medical college are different. The primary obligations of the former are to the patient, for whom the hospital provides shelter and facilities for care and tries to attract an adequate medical staff. The continuing education of the younger members of the staff is rightfully a secondary consideration. On the other hand, the main function of a medical college should be to select and train medical recruits to be good physicians. Medical colleges try to provide opportunities and sufficient challenging experiences so that their graduates are basically competent physicians. This is becoming more and more difficult. In those fortunate centers where a medical college is coupled with a hospital, the professional staffs are identical, and the preclinical departments of the medical college have the vision, funds, and inclination to cooperate fully, a superior graduate program is probably in operation. There are too few such loci now available.

If the trend toward specialization continues, as there is every reason to expect it will, the medical colleges cannot evade their responsibility to their own graduates to provide a program and to supervise and instruct in the specialties. It is debatable whether the more general use of the graduate degree, which should indicate ability in teaching or research, will be found desirable. There are, no doubt, many valid reasons, financial and otherwise, for failure of many medical colleges to assume the responsibility to graduate education. With the present reduced demand for graduate training it would seem appropriate for the medical colleges to show a more active interest in this vital problem. In the future they should assume the lead in the specialty movement.

ECONOMICS OF SPECIALIZATION

The specialty movement has developed rapidly and spontaneously. It has been erroneously blamed as responsible for some problems, particularly the rising cost of medical care. In most communities the fees charged by specialists, with the exception of those in the surgical fields, are not substantially more than those of general practitioners, although they are necessarily higher than formerly. This fact is not, however, the main cause of hardship. Illness costs more than formerly, chiefly because diagnostic measures are more complicated and, therefore, more expensive, and because the cost of hospitalization has increased enormously. Many modern drugs are expensive. The charge that specialists are responsible for the economic woes of the general public, because patients have to be referred from one kind of specialist to another, has some small basis in fact. This should be offset to some degree by the expected lessening in morbidity through more expert care. It should be emphasized that the physician's fee is actually only a

fraction of the total cost of medical care. The rapid growth of group practice is a significant trend, being an answer to the demand for specialist care in smaller communities. The provocative, impatient idealism of Means⁹ raises many questions relating to defects in present day medicine. The role of government looms large in his attempts to point the way to improvement. The majority of physicians apparently feel otherwise.¹⁰ The main economic medical hazard is still the unpredictable catastrophic illness or injury that requires prolonged care and is further complicated by loss of income. This, of course, is not peculiar to specialization. It is an ever-recurring and fortunately rare problem the solution of which offers considerable difficulty. It has been partially solved by prepaid insurance for both medical care and hospitalization. Specialists, as physicians, have in the past cooperated and will always cooperate in such situations with their services donated or at reduced fees when indicated by hardship or distress. The ability to provide adequate specialist care in sparsely populated communities is a difficult problem, but it should not be insurmountable. It is here that planning on a county, state, or national level may be required, if the problem cannot be solved under the auspices of existing organizations.

RESPONSIBILITIES OF SPECIALISTS

It is to the credit of physicians that they have been willing to undergo the additional training required by the boards in order to qualify for special recognition. This has seldom been an easy assignment. Small wonder, then, that the frequent reaction of a new diplomate is to throw his books into the corner and say that he is through with study forever. He knows, of course, that he has only started on a program that will continue during his professional life. He must either continue to study and become increasingly proficient or he will regress. His duty to himself, to the profession, and to his patients is to come periodically in contact with others in the specialty and to keep abreast of new developments. In addition, there is a debt to the physician's teachers to be repaid. This should take two forms: (1) there should be a personal, professional contribution, by research, by teaching, and by helping to organize or to staff dermatology departments, and (2) there should be support of the activities of his specialty board, the American Academy of Dermatology and Syphilology, the A M A, and other organizations, local, regional, and national in scope. Active participation means regular attendance at meetings, appropriate discussion in the scientific deliberations, and the voicing of suggestions or criticisms when such seem desirable or necessary. Communications are best directed to the secretary of the organization in question. Rumors that are palpably false regarding the activities of a medical organization should be brought to the attention of its officers, so that further harm may be stopped.

SPECIALIST MEDICINE IN THE FUTURE

With the gradual reduction in the number of general practitioners there are some communities in which it is difficult to find a "family doctor." It is, therefore, important for each physician, whether specialist or not, to qualify as family doctor. Such a physician must have the confidence of a family that consults him when illness de-

⁹ Means, J. H. *Doctors, People and Government*, Boston: Little Brown & Company, 1953.

¹⁰ *Doctors, People, and Government*, Book Review, J. A. M. A. 154:183 (Jan. 9) 1954.

velops It is more than likely that some physicians will continue to wish to be general practitioners, caring for common disorders and acting as family physicians From all indications, however, the percentage of such physicians will continue to decline gradually

The time would seem appropriate to banish the idea that specialists are primarily consultants Formerly, the specialist was often thought to be a standoffish, cold-fish scientist Unfortunately, there are still some specialists with a detached and perfunctory attitude of superiority and a lack of appreciation of the finer sensibilities of the patient For the most part, however, the specialist of today is a realistic, sympathetic practitioner and does his most effective work when he looks after the patient, rather than when he tries to supervise the problem with another physician At times, consultation between physicians is valuable, but usually this is when the diagnosis is in doubt, when there is some question of medicolegal complications, when long-continued therapy has been ineffectual, or when a decision may determine the life of a patient The United States is now the most fortunate nation in the world, medically as well as in many other ways, however, there is still room for improvement It is a matter of record that there are many places in the United States where specialist care of patients is the rule Most of the practicing physicians on the staffs of institutions in the larger cities, and in many medium-sized and smaller cities in the United States, confine their practice to a limited field The success of group practice in many sections of the country is further evidence that care of patients at the specialist level can be accomplished in sparsely settled communities

So far the demand for specialist care has been mostly from larger centers of population There is evidence, however, that increasingly the rural population and persons in small towns will insist that they too should be treated by specialists A patient who recently came 150 miles to New York said he did this because he noted that that was what the physicians in his community did when they required medical attention This is a period of transition and the change will no doubt require many years Indications at this time point to eventual universal specialization As mentioned previously, it would appear from analysis of available statistics that one out of 40 practitioners should be a dermatologist Since there is no agreement as to how many physicians of all categories are required to provide medical care for the United States, it is obviously impossible to do more than guess at the future dermatological requirements Nevertheless, it is evident that the saturation point has not nearly been reached In fact, the number of dermatologists at this time could be probably doubled, provided there was a proportional increase of other specialists The outlook in the next 30 years could well be 4,000 to 5,000 dermatologists, or even more as the population increases

The present agitation for the socialization of medicine is mostly due to economic considerations, but the desire of the public to receive not only adequate but superior medical care may be an additional factor Many persons mistakenly believe that in some magic way the cost will be less and the quality of medical care will improve if the government is in control It is evident that the present

administration is not anxious to venture into the regulatory field, and future administrations will not have the incentive if the public generally receives the superior medical care that is available now for a minority The chief problem is to provide specialist care in sparsely settled districts The great and continuing advances in medicine must become universally and promptly available, which will require a sufficient number of specialists

SUMMARY

From 1943 to 1950 about 25,000 physicians became certified as specialists The result has been a profound change in medical practice, since from one-third to one-half of all physicians now in active practice are specialists To judge from a survey of certified dermatologists, the distribution of specialists is still uneven The highest rate per capita is found in the large centers of population, but increasingly, even in smaller cities and large towns, specialist care may be obtained It is in the rural communities and in sparsely settled areas that specialists are in short supply The continued increase in group practice and the large number of rural communities in which a hospital center has been established makes it evident that specialist care will be in time available to all sections of the United States It is apparent that this major change in medical practice has occurred concurrently with sociologic and economic problems of utmost difficulty to solve Lack of specialists may be an important factor with the rising cost of medical care as a basis for talk of socialization It is probable that if specialist medical care was more evenly distributed there would be no appreciable demand for state medicine The specialty boards as examining agencies have served an invaluable role in setting up standards of proficiency for specialists Specialists must continue to study in order to keep abreast of current progress and should support the activities of organized medicine Efforts should be made to shorten the total period of education of the physician This is increasingly important since the majority of physicians now believe graduate training to be essential in order to prepare for the demands of private practice The question is raised whether the medical colleges should not more closely integrate and supervise graduate education that should in the near future be considered of equal importance with the basic undergraduate medical course

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Ozone Toxicity—Ozone is found in the stratosphere where it is formed by the action of ultra violet light on oxygen the amount varying with the latitude and season of the year The atmospheric circulation tends to bring some of this ozone toward the surface to add to that produced by atmospheric electrical discharges Ozone concentrations near the earth's surface are normally very small being of the order of from zero to a few hundredths parts per million (Higher values reported in the past have now been shown to be due to faulty analytic methods) The presence of even these small amounts of ozone however causes relatively rapid cracking in stretched natural rubber—a test that is used for ozone detection Recently it has been shown by Haagen Smit and his group that ozone undoubtedly plays a dominant part in contributing to eye irritation crop damage, haze and odor of Los Angeles smogs—H E Stohlinger Ph D., *Ozone Toxicity* A M A Archives of Industrial Hygiene and Occupational Medicine May, 1954

ORGANIZATION OF A PATHOLOGICAL ANATOMY LABORATORY SERVICE

SYSTEM FOR RECORDS, STANDARDIZATION, AND RESIDENT TRAINING

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The object of this paper is to present procedures for the organization of a pathological anatomy service based on the methodology of the Standard Nomenclature of Diseases and Operations.¹ These procedures have been used for the past two years. It is felt that they represent a step in the direction of achieving uniformity and standardization and will facilitate research and statistical analyses of records within a given department and between several laboratories, they also facilitate the orientation and training of residents in pathology. Angrist,² in 1946, had initially recommended the use of the nomenclature and its coding scheme for use in the pathology laboratory. At present it is being used, in part, in many laboratories. It is hoped that this paper will serve to popularize the use of the nomenclature as initially described for coding and filing and to make additional suggestions for its over-all usage in pathology.³

In the past 10 years great strides have been made in achieving uniformity in hospital clinical records and files. This has been possible due to the sponsorship by the American Medical Association of the Standard Nomenclature of Diseases and Operations as the reference for diagnostic terms, coding, and filing.⁴ To date, 4,937, or 74%, of the registered hospitals in the United States use the nomenclature clinically, and hospitals in numerous other countries have also adopted it.⁵ Dr A Bradford Hill⁶ emphasized the need for a uniformity of nomenclatures and procedures in medicine to collect and record material, which could then be more ably used

for progressive statistical evaluation. The need for an ideal nomenclature may still exist,⁷ but for the present the Standard Nomenclature of Diseases and Operations represents an encouraging compromise. The diagnostic terms are now cross coded with the International Statistical Classification of Diseases, Injuries, and Causes of Death, which extends the usefulness of the nomenclature to international statistical problems as studied by the World Health Organization.⁸ The Standard Nomenclature of Diseases and Operations has been translated into Spanish and Portuguese and is being extensively used in Latin America, Canada, and Palestine, and therefore "the possibility of international uniformity in medical nomenclature is foreshadowed."⁴ In this light, it is of interest that in Great Britain, the "Nomenclature of Disease" has been revised with the adoption of the basic organization of the American nomenclature with only moderate modifications of the etiological classification.⁹

In surveying the records of numerous pathological anatomy laboratories, one is struck with the contrasted comparison to the uniformity of hospital clinical records. Diagnostic terms, coding, and records used in the pathology laboratories differ from laboratory to laboratory and from laboratory to clinical record files in the same hospital. It appears somewhat ironical that pathology, the science of medicine, should lag behind clinical medicine, the art of medicine, in the achievement of organization, uniformity, and standardization, which are qualities more related to science than to art. In addition, terminology tends to differ from pathologist to clinician. Therefore, the adoption of a standard system by the pathology laboratory as well as the clinical services may well be a step forward in the achievement of the dependent interests of clinical and laboratory medicine.

It is notable that prominent pathologists have participated in the preparation of the nomenclature. In addition, the new 1952 edition has incorporated the preferred nomenclature concerning hematology as recommended by the Committee for Clarification of the Nomenclature of Cells and Diseases of the Blood and Blood-Forming Organs. This edition also includes the new classification of tumors, which has the sponsorship of the American Society of Clinical Pathologists, the Armed Forces Institute of Pathology, and others. This is in accord with the aim of the nomenclature to keep abreast of the progress in medicine by periodic revision and is a measure of the needed cooperative spirit of pathology in such progress. These revisions can be to the advantage of the laboratory, since it will enable the large pathology laboratory using the nomenclature periodically to rejuvenate and store (with the appropriate edition of the nomenclature), what would otherwise have become cumbersome and space-occupying files.

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Drs Sebastian Caniglia, William Glassman, Albert Levy and Irving M Reingold assisted in the preparation of this paper. Miss Terese Nielsen and Mrs Ann Shell gave secretarial assistance in the preparation of the manuscript.

1 American Medical Association. Standard Nomenclature of Diseases and Operations, edited by R J Plunkett and A C Hayden, New York, Blakiston Company, 1952.

2 Angrist A. Classification and Cross Indexing of Pathological Material by Means of Chart Adaption of the Standard Nomenclature of Disease, *J Tech Methods* 25:106-122, 1945.

3 Schoen, I, and Reilly, E B. Coding of Pathologic Diagnoses, Letter to the Editor, *Am J Clin Path* 24:713, 1954.

4 Jordan, E P. Standard Nomenclature and Medical Record Library. *Mod Hosp* 68:54-55, 1947. Huffman, E K. Application of Standard Nomenclature in Small Hospital, *Bull Am Coll Surgeons* 32:164-166, 1947.

5 Hayden A C. Classification of Diseases, Correspondence, *Brit M J* 1:672, 1953. Arestad, F H, and McGovern M A. Hospital Service in the United States, *J A M A* 152:143-163 (May 9) 1953.

6 Hill, A B. Personal communication to the authors.

7 Reimann, S P. Green Pastures in Pathology, *Am J Clin Path* 18:349-353, 1948.

8 World Health Organization. Manual of International Statistical Classification of Diseases, Injuries, and Causes of Death rev 6 of the International Lists of Diseases and Causes of Death, Adopted 1948, bull, supp 1, Geneva, Switzerland. World Health Organization, 1949.

9 The Nomenclature of Disease. Joint Committee appointed by Royal College of Physicians of London, ed 7, London, England, His Majesty's Stationery Office, 1948.

The use of the standard nomenclature is equally applicable to small and large laboratories and forms a basis for personal filing of reprints, lectures, and papers, the preparation of small teaching sets of normal and pathological tissue slides, and for the filing of gross and microscopic photographic slides. The usefulness of the standard nomenclature system is also attested to by the adoption of its outline, in part, for cataloging by medical libraries and museums.¹⁰

In the past few years some suggestions have been made for the organization of pathological material on a departmental service basis or for personal slide collections.¹¹ These offer personalized programs but do not achieve the over-all benefits of standardization plus organization as does the system based on the nomenclature. Thinking in terms of anatomic and etiologic diagnosis and pathogenesis is the basis of study methods of gross and microscopic pathology. This, too, is the basis of nomenclature and coding in the Standard Nomenclature of Diseases and Operations, by virtue of its topographic and etiologic classifications and subdivisions of structural manifestations.

METHOD

An understanding of the general scheme of the nomenclature and its use in the coding of surgical and autopsy diagnoses can be achieved readily by reading the few pages of the introduction in the nomenclature. The article of Angrist,² which more especially applies to the pathology laboratory, will also be helpful in filing and coding suggestions. Many diagnostic terms appear in the index of the Standard Nomenclature of Diseases and Operations. If a diagnostic term does not appear in the index, coding is easily performed by using the preliminary sections detailing the topographic and etiologic terms. To select the appropriate code number for any diagnostic term not in the index, it is easy to identify the topographic and etiologic component independently from the preliminary sections detailing the topographic and etiologic terms. This, too, may even be facilitated by using the chart outline in the article by Angrist.² An example of this coding or cataloging for the purpose of filing is as follows: Myocardial hypertrophy, unknown cause, may be coded 430 from the topographic classification (page 23), and 9x6 from the etiologic classification section (page 80), as unknown cause with structural reaction manifesting hypertrophy. The chart from Angrist could also be used. If a useful diagnostic term does not appear in the index or if an appropriate code number cannot be found it is suggested that the pathologist communicate with the editors of the nomenclature. One should not devise code numbers that do not appear in the nomenclature, as this is the province of the editors and the purpose of the nomenclature. How far one goes in the details of numerical coding will depend on the amount of material in the particular laboratory or for the particular service. For small personal filing or teaching sets of slides, subject headings instead of code numbers might be used in the same order by system.

To facilitate the general use of the nomenclature, mnemonics for the order of systems and etiologic classifications provide convenient memory schemes. The order of terms in the topographic classification based on

the first letter of the main word in each system can be remembered easily as Bīm RCH Dūēnō. The order of terms in the etiologic classification can be less easily remembered as Pīp Dīm Dīnū, as indicated in the table. These mnemonics facilitate the autopsy demonstration and the writing or dictation of the protocol. They serve also as an easy reminder of the where, what, and how of pathology.

The practicability of using the nomenclature in achieving uniformity will not interfere with the individuality so cherished by the well-trained pathologist. No matter what term one may choose (for example, nephrosclerosis or arteriosclerosis), the coding and filing in anatomic and etiologic terms will be similar in most all instances. The controversies concerning the use of the proper etiologic terms will stimulate discussion and often raise

*Schema of Classification After the Standard Nomenclature of Diseases and Operations**

Topographic Classification (Main Divisions)			Etiological Classification		
Mnemonic	Ald	Bīm RCH Dūēnō	Mnemonic	Ald	Pīp Dīm Dīnū
Body as a whole	000	000	Prenatal influence diseases due to		
Integumentary system	100	100	Infections diseases or infections due to a lower plant or animal parasite		
Musculoskeletal system	200	200	Infestation diseases or infection due to a higher plant or animal parasite		
Respiratory system	300	300	Intoxications diseases due to		
Cardiovascular system	400	400	Physical agents diseases due to trauma or physical agents		
Hemic and lymphatic system	500	500	Disturbances in circulation innervation or of psychic control diseases secondary to		
Digestive system	600	600	Mechanical abnormality diseases due to or consisting of static mechanical abnormality		
Urogenital system	700	700	Disorder of metabolism growth or nutrition disease due to		
Endocrine system	800	800	New growths (neoplasms)		
Nervous system	900	900	Unknown etiology diseases due to unknown or uncertain cause with structural reaction manifest or		
Organs of special sense	x	x	With the functional reaction alone manifest		
			y		Undetermined cause

the question of "why," which should initiate and promote progress in study and research. In the section of the nomenclature corresponding to supplementary terms there are useful categories often applicable to general pathology and topics of special or personal project interests can be filed with this section.

The over-all task of finding code numbers when one is familiar with the system of the nomenclature, assisted by the mnemonics described (and the outlined chart from Angrist) is not inconvenient, especially in view of the academic yield stimulated by the etiologic classification. The routine task is lessened by the presence of a

10. Army Medical Library Classification Medicine and Related Subjects preliminary edition Washington D. C., U. S. Government Printing Office 1948.

11. Gordon H. Method for Cross Indexing Pathologic Diagnoses. *Am. J. Clin. Path.* 17: 913-914, 1947. Wolf, E. Simplified Index of Pathologic Diagnoses. *Ibid.* 22: 764-767, 1952. Lennox, B. A Short Classification for the Small Histopathologic Collection. *Lab. Invest.* 2: 164-171, 1953.

trained pathology secretary who will have no difficulty in finding the appropriate code numbers for the more numerous and common diagnoses and who, we find, even enjoys the intellectual content associated with the use of the Standard Nomenclature of Diseases and Operations

For the routine performances in the usual pathology laboratory, cross indexing and filing by patient's name, number (autopsy or surgical), and diagnostic code numbers or terminology facilitates the availability and usefulness of accumulated materials, as has been the experience of many laboratories. In the preparation of the autopsy protocol the topographic outline (Bīm RCH Dūcñō) is used for both gross and microscopic descriptions. This facilitates correlation between gross and microscopic findings and vice versa and the reviewing of autopsy protocols for specific findings.

The use of the routine autopsy procedure, autopsy demonstration procedure, and protocol outline based on the nomenclature has habituated the pathology resident to an efficient, thorough, and thoughtful study of pathology. The arrangement of files, materials, and records makes the departmental material more accessible for teaching and research.

SUMMARY AND CONCLUSIONS

In this laboratory, the Standard Nomenclature of Diseases and Operations, applied as described above, has been enthusiastically and gratefully received by staff pathologists, residents, and secretaries. The incorporation of the system of Standard Nomenclature of Diseases and Operations into the organization of the pathological anatomy service has proved the basis of a well-integrated department.

In over 10 years' use, the nomenclature has proved itself an extremely valuable tool in cataloging clinical records. Its merit is attested to by its use in 74% of the nation's hospitals. The system is invaluable for the coding of pathological as well as of clinical diagnoses. It provides a common denominator for clinician and pathologist in the hospital laboratory. It provides a means of comparing records from various hospitals and laboratories. It is plastic enough to be used in laboratories of various sizes. In teaching programs it assists in orienting and training the pathology resident. It is a means of achieving some uniformity and standardization of terminology and methodology in medicine and lessens the schism between laboratory and clinical medicine.

MEDICAL EXPERIENCES IN COMMUNIST POW CAMPS IN KOREA

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The following report constitutes a general recital of the experiences and observations of five American medical officers who were prisoners of war of the Communists in Korea. No attempt has been made to present this material as a scientific study. The period of observation started in July, 1950, and continued until September, 1953, when the last group of prisoners of war was repatriated. A large part of the accumulated prisoner of war experience is included. Some of the smaller groups composed largely of men who were captured after Jan. 1, 1952, were not observed directly by any of the captured medical officers.

THREE PHASES OF CAPTIVITY

The entire period of captivity is divided into three general time phases. The first phase started with capture and ended with arrival in the first permanent camp. It was characterized by lack of food and shelter, forced marches, and exposure to the elements. Men were forced to march through snow storms without adequate clothing or foot covering. Food was supplied and prepared by the local inhabitants. Frequently there was no food for 24 to 72 hour periods. The only water available for drinking was snow or water from polluted sources, such as standing wells, creeks, and rice paddies. With few

exceptions, the prisoners got to rear areas by marching and carrying the wounded, either on improvised litters or on their backs. Injuries resulting from prolonged marches and exposure to cold were common. Dysentery made its first appearance. Medical supplies were nonexistent, and treatment was limited entirely to first aid, using improvised splints and rag dressings. Most of the prisoners experienced severe mental depression.

The second phase began with the arrival at the first permanent camp and ended about October, 1951, when the first beneficial effects of the armistice negotiations were felt. This was a phase of profound deprivation of all the necessities of life. The diet was grossly inadequate. The Thanksgiving, 1950, meal of one group of 500 men furnishes a typical example. Each man received a millet ball weighing less than 200 gm., and the whole group was given soup prepared by boiling nine heads of cabbage in water. Group sanitation and personal hygiene were at their lowest levels. The men were housed in small, unheated, overcrowded, vermin-infested Korean farm houses. No clothing was issued until July, 1951. Medicine and medical care were inadequate, and morale reached its lowest ebb. In the face of all these conditions, sickness and death became the order of the day.

The third phase began in October, 1951, with gradually increasing quantities of food, clothing, and medicine. This period was characterized by many fluctuations in the attitude of the captors toward the prisoners, which

appeared to follow changes in the political situation and the armistice conference. The diet remained inadequate in protein and vitamin content. Housing was gradually improved to a point of relative comfort, and clothing was sufficient for survival. Sanitary conditions, while never good, underwent a gradual improvement. Medical care never became adequate. Avitaminoses were prevalent.

MEDICAL CARE

The health of all United Nations' prisoners was neglected throughout the period of captivity. Before the onset of armistice negotiations the Communists showed no uniform desire to keep the prisoners alive. By the spring of 1951 the food shortage had become so acute that weeds growing adjacent to the prison compound were boiled and eaten. Most of the serious disease epidemics occurred during the first year of captivity. Pneumonia and dysentery were epidemic at this time. Some of the captured medical officers were allowed to see patients. Medical and surgical supplies, however, were doled out on a day-to-day basis. The so-called hospital compounds were frequently the coldest buildings in the camp. The patients slept and lived on the floors of these filthy, crowded compounds. It was common for them to awaken in the morning and find that the man sleeping on either side had died during the night. No provision was made for the prisoners to be properly clothed, and their diet was always poor. At times they were put on a special diet consisting of an unseasoned preparation of soupy rice.

Penicillin and the sulfonamides were available sporadically and in such small quantities that it was not possible to treat all who needed these drugs. On one occasion we were given 2 million units of aqueous penicillin for the treatment of approximately 100 cases of pneumonia. Our captors refused to allow more than 6 gm of sulfonamide for the treatment of any single pneumonia patient. Frequently, the only medicaments available were cough tablets for pneumonia and charcoal tablets for dysentery. Surgical problems were handled in an equally haphazard manner. It was necessary to wait several weeks to obtain a few surgical instruments and the barest minimum of anesthetic materials. Incision and drainage of abscesses was usually carried out without anesthesia, by using improvised instruments, such as a knife made from the arch of a combat boot.

Deaths—Virtually all of the deaths in the Communist prisoner of war camps were caused directly or indirectly by starvation, exposure, and the harassment by the enemy. The lack of medicaments was not the most important factor. During the first month or two of captivity most of the deaths occurred among the wounded. During the succeeding three to five months most of the men died either from pneumonia or dysentery, or from a combination of these two. After the first five or six months of captivity the majority of deaths occurred among persons suffering from pellagra or beriberi. During one five-month period there were between 5 and 28 deaths per day in one camp in North Korea. None of these men had illnesses that would have caused death had they been under normal conditions.

After October, 1951, the prisoners were put on a subsistence diet and were given sufficient clothing and rea-

sonably warm housing. All of the men continued to suffer from periodic loss of day and night vision, and bleeding from soreness of the mouth and lips. There were occasional cases of pneumonia and dysentery. Sickness and death became so common during the first year and a half of captivity that the prisoners began to feel that any sickness would be fatal. In an attempt to overcome this attitude, the captured physicians coined a very unfortunate term, "give-up-itis." The use of this term had its desired immediate effect on the prisoners. It made them realize that the individual's fighting spirit had to be maintained at a high level for him to survive any illness. The term, "give-up-itis," has recently gotten wide circulation in the public press. The erroneous impression has been created that prisoners of war who were in good physical health gave up and died; this is not true. Every prisoner of war in Korea who died had suffered from malnutrition, exposure to cold, and continued harassment by the Communists. Contributing causes to the majority of deaths were prolonged cases of respiratory infection and diarrhea. Under such conditions, it is amazing, not that there was a high death rate, but that there was a reasonably good rate of survival.

Chinese Physicians—During the summer and fall of 1951, all of the British and American doctors were gradually replaced by Chinese. Most of the Chinese doctors exhibited a wide range of medical incompetence. Most of them had a maximum of six months' formal schooling, and we saw only one physician who appeared to be well trained. The Chinese doctor who was put in the most responsible position was one who was best oriented politically. The average Chinese doctor who conducted sick call in the prisoner of war camps elicited only the chief complaint and prescribed medicine for symptomatic relief. It was a general rule that only one symptom would be treated at a time, therefore, if a patient suffered from night blindness and diarrhea, it was necessary for him to decide which of these complaints was bothering him more before he went on sick call. He would not be treated for both conditions.

The Communists introduced us to several unusual types of medical treatment. One Chinese doctor used a series of short needles attached to spring vibrators for the treatment of pain. The needles were placed in the skin around the painful area and then were made to vibrate. As one might suspect, some cases of back pain and headache were cured by this treatment. At one time a Chinese doctor decided that all of our visual disturbances were caused by glaucoma. He injected hypertonic sodium chloride solution subconjunctivally. Another notable treatment was used for avitaminosis. Bile was obtained from the gallbladders of pigs when they were butchered, and it was then dispensed to all who complained of vitamin deficiency diseases. This treatment had its desired effect in keeping patients away from sick call. In the summer of 1951 a great Russian panacea was used in treating 56 seriously ill patients. This consisted of the subcutaneous transplant of small pieces of chicken liver that had been incubated in a weak solution of penicillin. These patients were immediately put on an attractive, high calory, high protein, high vitamin diet. In all cases the chicken liver either sloughed through the

operative site or became a hard, tender nodule. None of these men died, and we were thus allowed to witness another miracle of soviet medical science.

INDOCTRINATION

The most important single consideration that placed the prisoners of war in North Korea apart from any other group of American prisoners of war was Communist indoctrination. This indoctrination had a profound effect on the general health of the group. The medical profession and the American people as a whole have a great deal to learn from a study of the techniques, purposes, and effectiveness of Communist indoctrination as it was used on Americans in North Korea. There is no reason to believe that the Communist indoctrination techniques that were used on the prisoners of war were different in any way from the general pattern of indoctrination that is being used in Communist-dominated countries today. It is important to realize that every aspect of the daily life of the prisoner, from the moment of capture to the time of release, was part of the general plan of indoctrination. At the time of capture, each prisoner was given the general theme of indoctrination: "We are your friends. Your conditions of living are bad now, but we will work together to improve them. We will correct the errors in your thinking. Once you have learned the truth, we will send you back to your families."

Steps in Indocrination—The first necessary step was to break down the normal resistance to an alien ideology. This was accomplished by keeping the prisoners cold, hungry, and in a state of disorganized confusion until each person realized that resistance meant starvation and death. It was emphasized repeatedly that the prisoners were no longer members of the armed forces of their nation, and all attempts to maintain a military organization were harshly punished. The planners of this indoctrination program did not condone the shooting of large numbers of prisoners. Instead, they resorted to starvation and exposure to cold. After a few months of this treatment the resistance of the survivors had softened. The second phase of indoctrination consisted of an intensive formal study program. For a period of approximately one year, most of the waking hours of the prisoners were spent in some form of supervised study. Food was gradually improved and more clothing was issued. It was made painfully clear to each prisoner that living conditions would be improved only so long as there was no resistance to the study program. The formal study program consisted of an endless repetition of two main themes, first, that the United States government is imperialistic, run by and for the wealthy few, and, second, that Communism reflects the aims and desires of all the people and is the only true democracy. The main propaganda technique that was used was ceaseless repetition of the main theme.

During the third phase all formal studies were stopped. The groundwork had been laid, and, to a large extent, the purposes of the indoctrination program had been fulfilled. Books, pamphlets, and newspapers became available in quantity. During this time, the Chinese conducted many individual and small group interviews. They attempted

to find points of individual susceptibility on such grounds as race, religion, or economic status. The most intensive subject for special indoctrination was the bacteriological warfare hoax. Throughout the period of captivity there were many instances of individual brutality. Solitary confinement, beatings, withholding food and water, and exposure to cold were common punishments. Resistance leaders were taken away from the main body of prisoners and kept either in solitary confinement or in small groups of recalcitrants. No one escaped the indoctrination program. When a captured medical officer stated that he had no interest in politics, he was told, "Up to this time your education has been incomplete. You have only learned how to cure. We Communists will teach you whom to cure."

Purposes—The indoctrination program had a two-fold purpose, first, the selection and conversion of susceptible persons, and, second, group neutralization. During the first year of captivity there was a continual regrouping of prisoners in an attempt to isolate resistance groups. They were separated according to rank and later according to national and racial groups. There were a few persons who eventually accepted the Communist ideology, but they constituted only a small minority of any single group. The second purpose of indoctrination, group neutralization, was far more important and somewhat more successful. The Communists fostered discontent and distrust within the groups. So long as there was no unity of purpose, there could be no effective resistance.

COMMENT

The experiences of this group, therefore, form a valuable basis for the understanding of Communist aims and techniques. Most persons in the United States are probably guilty of a certain smugness about the possibility of Communism actually taking over our country. It is worth while to keep in mind two well-known facts: first, no country has ever been taken over by Communists because the majority of the people in that country wanted it, second, no country once it has been taken over by Communism has ever reverted to another form of government. Communist tyranny has been maintained by the application of indoctrination techniques similar in every respect to those that were practiced on the prisoners of war in North Korea. A relatively small group of Communists with a definite plan would have little difficulty in wresting power from a government that is paralyzed by a coalition of small groups concentrating on their own short-sighted self-interests.

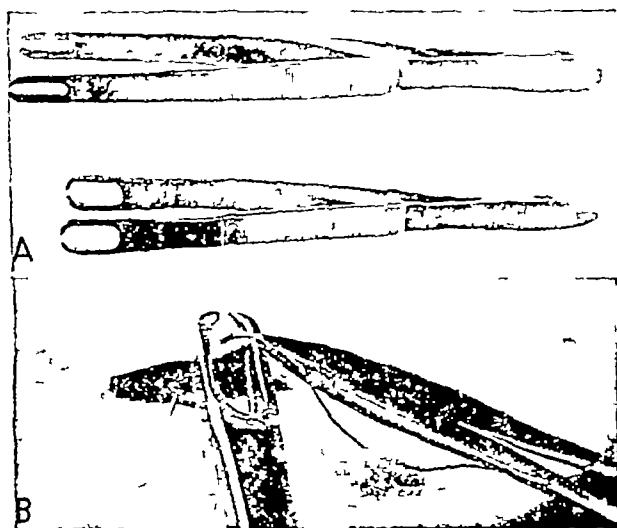
The people of the United States must realize that the spread of Communism anywhere in the world, whether by armed aggression or by internal infiltration, constitutes a direct threat to our survival as a nation. Americans must work against Communism by being vigilant, they must work for democracy by constantly striving toward the democratic ideal of an enlightened people participating in their government. Physicians have an influence that is out of proportion to their numbers. That influence should be used to fight Communism by intelligently promoting democracy.

CLINICAL NOTES

NEW SUTURE FORCEPS

Daniel Levinson, M D, Seattle

Suturing of skin lacerations is among the most frequent minor surgical operations in the general practice. The usual method of suturing, in which the skin edge is held with a straight forceps while the needle is passed, is mechanically unsound because the skin is supported at one point only. Resistance to the needle creates a stretching and tearing shear force between the needle and the forceps, requiring additional effort and resulting in trauma to tissue, pain, and occasional bending or breakage of the finer curved needles. A new suture forceps is here described, which allows the skin to be



Suture forceps designed for suturing skin lacerations. A two examples of the instrument. B the instrument in use.

held gently but tautly between two metal fingers. Because of the ease and rapidity with which the needle may be passed through even tough skin when it is held taut, many wounds may be closed without the use of local anesthesia. Avulsed and loosely hanging skin flaps, usually difficult to manipulate without assistance, are easily handled and sewed with this forceps. Although the photographed instruments are designed for general work, with modifications in size and tip detail instruments of this type should find use in a variety of plastic procedures and in vascular surgery.

The instrument is a broad-bladed forceps with a tip composed of two narrow, 0.5 in. (1.3 cm) long metal prongs that taper to a narrow opening (see figure, A). The prongs are serrated on the opposing surfaces for better traction. The skin edge is held with the forceps, and the needle is passed between the metal prongs (see figure, B). After the needle has penetrated the skin the

The forceps illustrated here are manufactured by Vernon Dorn, Villa Park, Ill., and are available from Debs Hospital Supply Co., 5990 North West Highway, Chicago.

forceps may be removed to allow completion of the passage of the needle. The opposite flap is similarly handled, and the suture is tied in the usual manner.

325 Ninth Ave. (4)

EFFECT OF DEXTRAN ON THE VOLHARD CHLORIDE DETERMINATION

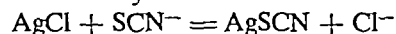
E. DuBose Dent Jr., M.D.

Anna R. Wassell, A.B.

and

Frank J. Svec, Baltimore

Recently in the process of performing a determination of the serum chloride level by an application of the Volhard method¹ on the blood of a patient who had received 500 ml of dextran solution,² a cloudy filtrate was obtained at that stage of the procedure in which the silver chloride precipitate is removed. Filtration is a necessary modification if an end point that is reproducible is to be obtained. Without filtration the end point fades rather quickly owing to the fact that silver chloride is more soluble than silver sulfocyanate and therefore reacts with the sulfocyanate:



The principle of filtration is supported by Peters and Van Slyke.³

Cloudy filtrates resulted at the same step during repeated determinations of the serum chloride on the blood of this patient for seven days and on the blood of a second patient with a different clinical condition for 24 hours. During this period the serum chloride determinations were also made according to the method of Schales and Schales.⁴ In this procedure no difficulty was encountered.

These observations suggested that dextran might be the cause of the cloudy filtrate obtained in the modified Volhard method.¹ Some *in vitro* experiments were used to determine whether this was true. In determination of chloride concentration of dextran solution, or of pooled serums to which dextran solution had been added in a 1:10 dilution, a cloudy filtrate was obtained at the same step of the procedure. This cloudiness persisted even after repeated filtrations utilizing various grades of Whatman filter paper.

In attempting to produce a clear filtrate in the presence of dextran, it was found that one of two methods might be employed. Allowing the cloudy filtrate to stand overnight before refiltering resulted in a clear filtrate. A second and more expedient method was to heat the cloudy filtrate for one minute in a boiling water bath. After heating, the precipitate of silver chloride could be removed by filtration in the usual manner with Whatman no. 42 filter paper.

From the Department of Pathology, Clinical Chemistry Section, U.S. Public Health Service Hospital.

¹ Volhard J., cited by Peters J. P. and Van Slyke D. D. *Quantitative Clinical Chemistry*. Baltimore: Williams & Wilkins Company, 1932, vol. 2, Methods, p. 829.

² In this study the dextran used consisted of 6% w/v of hydrolyzed fractionated dextran with 0.9% sodium chloride solution.

³ Peters and Van Slyke, p. 870.

⁴ Schales O., and Schales S. S., A Simple and Accurate Method for the Determination of Chloride in Biological Fluids. *J. Biol. Chem.* 140: 879-884, 1941.

These modifications do not interfere with the chloride ion since the chloride content of the dextran solution was determined as being 153.5 mEq per liter (The calculated chloride content should be 153.8 mEq per liter.) The chloride content of the pooled serums was found to be 109 mEq per liter. The chloride content of the pooled serums to which dextran solution was added in a 1:10 dilution was 114 mEq per liter.

In the recent literature⁵ that has been reviewed on the subject of plasma expanders, there are reports of slight elevations (less than 5%) in blood chloride levels due to the fact that the various preparations of dextran are suspended in isotonic sodium chloride solution. These articles, however, do not mention any necessary alterations in the method or methods that the authors used for the determinations. The technique described is a necessary modification if the principle of removing the precipitate of silver chloride is to be followed.

SUMMARY

By use of the Volhard method with removal of the silver chloride precipitate by filtration for the determination of serum chloride levels in the blood of a patient who had received 500 ml of dextran solution, a cloudy filtrate was obtained after filtration with various grades of Whatman filter paper. It was found that this cloudiness is due to the presence of dextran and that a simple technique for clearing the filtrate can be used.

Wyman Park Dr and 31st St (11) (Dr. Dent)

5. Bloom, W. L. *Present Status of Plasma Volume Expanders in the Treatment of Shock*. Clinical Laboratory Studies. A. M. A. Arch. Surg. 63: 739-741 (Dec.) 1951. Gray, I., Sliter, P. K. and Pulaski, E. J. *Metabolism of Plasma Substitute Dextran (Macrodex)*. Proc. Soc. Exper. Biol. & Med. 77: 626-627 1951. Turner, F. P., Butler, B. C., Smith, M. E. and Scudder, J. *Dextran: An Experimental Plasma Substitute*, Surg., Gynec. & Obst. 88: 661-675 1949.

STUDY OF PARA-AMINOSALICYLIC ACID INTOLERANCE IN TUBERCULOSIS OF LUNG

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John Schmidt, M.D.

Leslie H. Capel, M.D.

and

Lester Scheel, Ph.D., Trudeau, N. Y.

Para-aminosalicylic acid is coming to be recognized as a key drug in combined drug treatment (with streptomycin or isoniazid) of tuberculosis of the lung. Intolerance to *p*-aminosalicylic acid is widely recognized as a common practical problem in its administration. Intolerance is characteristically noted as gastrointestinal upset coming on about one week or more after the beginning of the drug therapy. The symptoms are anorexia, diarrhea, nausea, and vomiting, in that order of frequency. Some patients are continuously affected, some affected from time to time, and some never affected. The older and sicker the patient, the more likely he is to suffer. This phenomenon is not to be confused with the hypersensi-

tivity reaction characterized by fever, prostration, skin eruptions, nausea, vomiting, and leukopenia.

The cause of the upset has been variously attributed to (1) the drug itself, (2) an impurity contained in the commercial preparation, or (3) a substance that forms on standing in the liquid or in the dry state or both. The common impurity that has been identified in the commercial preparation is meta-aminophenol. In the pure state meta-aminophenol is a colorless water-soluble solid. Meta-aminophenol has been considered the cause of a brownish discoloration that develops in *p*-aminosalicylic acid when it stands, especially in solution. The brownish discoloration has been thought to be roughly related to intolerance to the acid. The biochemical and clinical aspects of this intolerance have been under investigation at the Trudeau-Saranac Institute.

OBSERVATIONS

The absorption spectra of three samples of *p*-aminosalicylic acid dissolved in water at a concentration of 20% are given in figure 1. The absorption spectra were read on the spectrophotometer immediately after the samples were dissolved.

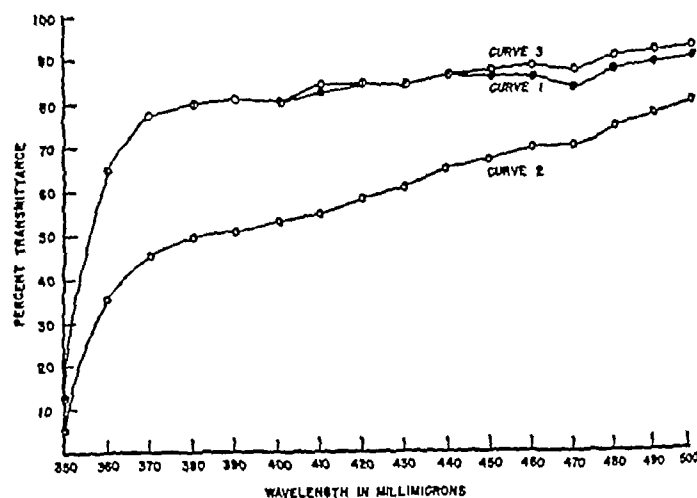


Fig 1—Absorption spectra for three forms of *p*-aminosalicylic acid in water solution.

Curve 1 of figure 1 is the absorption spectrum of a 20% solution of the chemically pure drug. Curve 2 is the absorption spectrum of a 20% solution of an old sample of the drug. This sample had been packed in polyethylene envelopes under nitrogen 18 months before. The crystals were a light tan color when they were placed on a white paper. Curve 3 is the absorption spectrum of a 20% solution of the chemically pure drug to which had been added 4% meta-aminophenol. These data demonstrate that meta-aminophenol does not increase the light absorption when added to chemically pure *p*-aminosalicylic acid in the wave-length region given. It is further shown that a change has taken place in the crystalline composition of the old sample of the drug and that this change is not the formation of meta-aminophenol.

The change in light transmittance at 390 mμ of 20% water solutions of three samples of *p*-aminosalicylic acid is given with respect to time in figure 2. Curve 1 shows the color development of the chemically pure preparation. Curve 2 shows the additional color development of old *p*-aminosalicylic acid in solution. Curve 3 shows the color development of the chemically pure drug with added 4% meta-aminophenol.

From the Trudeau Sanatorium and the Department of Biochemistry of the Trudeau-Saranac Institute.

The three forms of *p*-aminosalicylic acid used in this study were provided by Hellwig, Inc., Chicago.

It is obvious from these data that the solutions undergo a spontaneous and progressive change. Meta-aminophenol increases the rate of color development after the first few days. The chemically pure *p*-aminosalicylic acid undergoes the most rapid change during the first 24 hours but changes slowly thereafter.

The above observations indicate that the drug in the dry state or in solution undergoes a spontaneous change with time. Since the addition of meta-aminophenol to *p*-aminosalicylic acid in solution did not increase the absorption at the wave-lengths shown, the change is not due to the production of meta-aminophenol alone. The fact that meta-aminophenol speeds the rate of color production suggests that this compound either catalyzes or takes part in the formation of the colored product. It is suggested further that the colored material may be a polymerization product of *p*-aminosalicylic acid or its decomposition products or both.

A small clinical trial was also carried out with three forms of the drug: a sample more than a year old, the chemically pure drug plus 4% meta-aminophenol, and chemically pure *p*-aminosalicylic acid alone. These drugs were given for two weeks in the dose of 12 gm a day of the acid, or its equivalent in the sodium salt, to 10 pa-

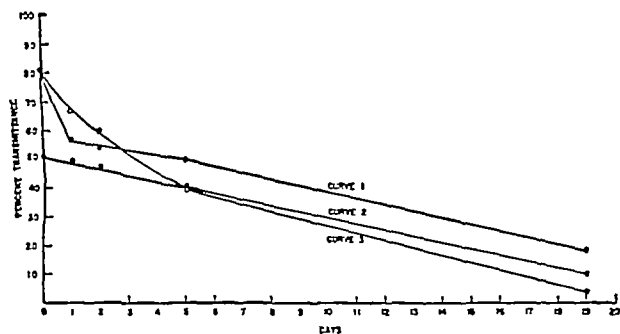


Fig 2—Change in light transmittance of three forms of *p*-aminosalicylic acid in water solution.

tients, 6 with far-advanced, 1 with moderately advanced, and 3 with minimal tuberculosis of the lungs. The oldest patient was 58, the youngest, 20. All had had chemotherapy, either streptomycin or isoniazid combined with *p*-aminosalicylic acid, for a month or more before, all were clinically improving, and none were suffering from symptoms either from their disease or from the treatment. The presence or absence of the symptoms described above was recorded daily. Neither the patients nor the physicians knew which drug was being used, all the patients were receiving either isoniazid or streptomycin as well as the *p*-aminosalicylic acid.

Of the 10 patients examined, only 5 were symptom-free throughout the investigation. Among the remaining five who had symptoms of intolerance, the different forms of the drug behaved as described below during the two weeks in which each was tried. The chemically pure drug produced one day of mild diarrhea in each of two patients and three days of mild diarrhea in one patient. The chemically pure drug adulterated by 4% meta-aminophenol produced 13 days of mild diarrhea in one patient and 5 days of mild diarrhea in another patient. The old sample of the drug produced symptoms in each of the five patients: 4, 9, and 11 days of diarrhea in each of

three patients and more than 10 days of both nausea and diarrhea in two. Interruption of the experiment was necessary in one of the latter patients. All these patients experienced immediate relief when given the standard commercial or chemically pure drug.

SUMMARY AND CONCLUSIONS

From these preliminary observations it is suggested (1) that gastrointestinal upset due to *p*-aminosalicylic acid is very often due to a brown impurity that develops with aging of the drug, (2) that meta-aminophenol, commonly thought to be the cause of intolerance, is not in fact the toxic substance involved in this problem, and (3) that the brownish impurity may be a resinous polymer of *p*-aminosalicylic acid. The latter concept is being investigated further.

Trudeau Sanatorium (Dr. Mitchell)

CLINICAL THERMOMETERS AND URINOMETERS

DETERMINATION OF THEIR ACCURACY

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and

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The purpose of this study is to determine the accuracy of some of our present-day clinical instruments, on which the physician relies for important information concerning his patients' status and progress. The study has been limited to the thermometers and urinometers in use at a 500-bed general hospital.

The success of modern medicine does not depend on the absolute accuracy of these instruments either for correct diagnoses or for proper management of the patient. The healing art was far along when the physician estimated temperature rise by the laying on of hands. The "urinologists" of former years could roughly discern whether a person's urine was too concentrated or too dilute.

Today, however, we have at our fingertips numerous instruments of precision that have rightfully taken the place of guesswork in medicine. Many times a physician comes into the modern hospital and sees on his patients' charts incongruous temperature graphs, weight changes, and urine specific gravity recordings. Indeed, sometimes he finds himself wondering whether his own guess would not yield more accurate information.

If he attempts to extract an explanation from the floor nurse, he receives a standard reply that the reading was what the thermometer showed. If he takes the trouble to call the laboratory to ask if the specific gravity of a patient's urine is really 1.040, the reply is that the results were checked twice. On occasion he may find that his patient has gained (or lost) 7 lb (3.2 kg) overnight, and he is puzzled until he discovers that the patient's last weight was recorded from a different scale, then he is further puzzled as to which scale was accurate.

Three outstanding reasons for the appearance of incorrect recordings of body temperature and urine specific gravity are obvious. 1 The instrument may be defective and inaccurate. 2 The person who uses the instrument may fail to properly read the results. 3 An accurate result may be incorrectly tabulated on the patient's chart. The latter two factors are exceedingly difficult to remedy, especially when the person involved is untrained and therefore prone to use poor technique and relatively poor observation. However, definite information and remedial measures can be obtained regarding the first factor—the intrinsic accuracy of the instrument.

Thermometers—Every thermometer in use on all the hospital wards and in the clinics at a large general hospital was tested against a standard thermometer, which was accurate at freezing and boiling points and at all gradations between these points. The clinical thermometers were first identified according to serial number, manufacturer, and type (oral or rectal), then shaken down until the mercury column was below 95 F. The thermometers were then partially submerged in about 2 in. (5 cm) of water in a constant temperature water

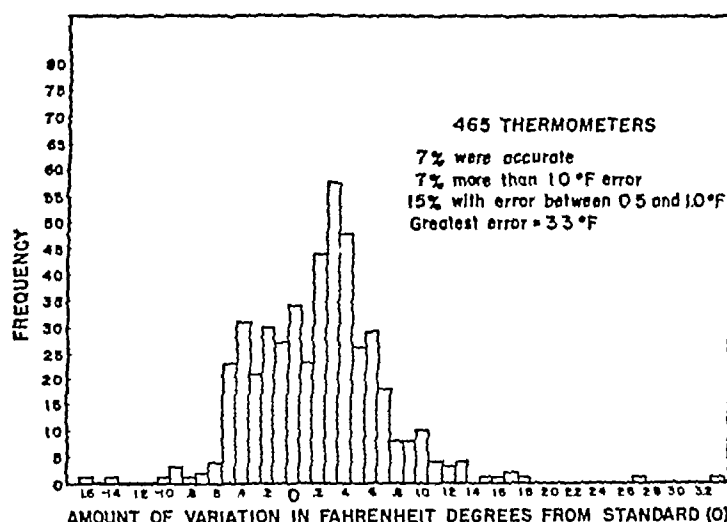


Chart showing frequency distribution of variation below and above standard thermometer

bath for a period of 10 minutes. The highest temperature indicated by the standard thermometer during the 10 minute period was recorded as the standard temperature. The readings of the clinical thermometers were then recorded.

A total of 465 thermometers were tested, of this number, only 34, or about 7%, were exactly in accord with the standard. Another 7% showed variation of one whole degree or more from the standard. About 78% of the total showed variation of less than 0.5 degrees. The greatest error was 3.3 degrees from the standard (see figure).

Many thermometers had defective pigmentation in the etched lines and figures. A few of the thermometers recorded the correct temperature of the water-bath, but the mercury column regressed immediately on removal of the thermometer to the cool room air. Many of the thermometers could be shaken down below 96 F only with considerable difficulty. One thermometer was noted to have the mercury column separated by air. All of these faults are serious and contribute greatly to inaccurate temperature recordings. One wonders how much needless laboratory work was done to find the cause for

the unexplained 0.5 degree of fever that must have been found in a considerable number of patients. The fact that most of the wards use nurses' aides to read and record temperatures probably adds another source of inaccuracy.

Urinometers—The majority of urinometers in use at this hospital were in the main urinalysis laboratory. The remainder were used in student laboratories and the outpatient urology clinic. Each urinometer was tested for accuracy in a container of distilled water that was maintained at the temperature for which each instrument was calibrated.

Of 15 urinometers tested, 4, or about 25%, were exactly accurate. The rest were all inaccurate, they registered from 0.003 to 0.010 below the actual specific gravity of the water. Thus, a specimen of urine might show a specific gravity of 1.005 when the actual recording should be 1.015. Such inaccuracy would obviously vitiate the concentration-dilution test as well as give misleading information in numerous disease conditions. Frequently an unusual specific gravity reading is rechecked by the technician, this is a futile procedure if it is done with the same urinometer or with another inaccurate one.

CONCLUSIONS

Physicians should be cognizant of the frequent inaccuracy of clinical instruments. If a patient has a persistent unexplained temperature elevation to 99.6 F, it is as important to ascertain the accuracy of the thermometer as it is to make cultures of the patient's blood. A persistent failure to concentrate urine to 1.010 or more can very probably be caused by a faulty urinometer. Laboratory technicians and all other persons who use and place reliance on such instruments need to be aware of such possibilities. Even such simple, readily available equipment as the thermometer and the urinometer should be periodically checked for accuracy.

LEPROSY ACQUIRED IN MILITARY SERVICE DURING WORLD WAR II

REPORT OF A CASE

Norman E. Levan, M.D., Bakersfield, Calif.

In 1947 Aycock,¹ in a study of leprosy in American veterans, made the prediction that an appreciable number of cases would result from service in endemic regions during World War II. This report concerns such a case. Similar instances may be anticipated during the next 30 or more years in veterans of both World War II and the Korean campaign who served in endemic regions.

The patient is a white man born in Kansas in 1907. The first symptom of his present illness appeared while he was in military service in the Philippines in July, 1945. At that time, without any preceding injury, a painless, irregularly circular 2 in. (5.08 cm) ulcer appeared on the left calf. This lesion healed spontaneously, leaving a hypopigmented, anesthetic, atrophic scar. During the next seven years the area of anesthesia slowly enlarged to involve most of the left calf. In December, 1952, there was a painless burn, from a gas heater, at the site of the original ulcer.

1. Aycock, W. L. and Gordon, J. E. Leprosy in Veterans of American Wars. *Am J M Sc* 214: 329-339 (Sept.) 1947.

The patient was then seen by various physicians including a neurologist who suspected the possibility of leprosy. The patient was referred to the veterans facility, Sawtelle, Calif., where extensive studies were done. Findings included a positive histamine reaction, that is, an absence of flare within the anesthetic area on injection of histamine phosphate solution intradermally, and anhidrosis in the same area after injection of pilocarpine. The lepromin test elicited no reaction. An attempt to abolish the positive histamine reaction under hypnosis was unsuccessful, however the staff felt that the diagnosis of leprosy could not be confirmed, and the patient left the hospital. In the course of the next two months areas of hyperesthesia appeared on the elbows and the left concha. On examination in June, 1953, I noted a small number of faint, pink, hypoesthetic macules with slightly thickened edges on the patient's chest, back, upper arms, and thighs. Histological examination of a specimen from one of these macules showed only slight perivascular round cell infiltration in the upper and midcutis on hematoxylin and eosin staining. However, with the Fite stain, rare acid fast bacilli were demonstrable, and these were also found in smears of material obtained by the scraped incision method. The lepromin test remained negative. Thus a diagnosis of leprosy, of either the early lepromatous type or the "indeterminate" group,² was established.

Review of the patient's family history and his various places of residence provides nothing to indicate that his condition could have been contracted outside of military service. His father was born in Kansas in 1873 and died in 1949 of coronary occlusion. His mother was born in Kentucky in 1881 and died in 1930 of asthma and "dropsy." Neither parent ever lived outside the United States. Two older brothers are both living and well. While not in the armed services, the patient has lived in three cities in the United States: Florence, Kan., from birth until 1940, Salt Lake City, 1940 to 1943, and Bakersfield, Calif., October, 1945, to the present time. From 1943 to 1945, he served in the United States Army in four locations: Camp Roberts, Calif., from October, 1943, to March, 1944; New Guinea, April to September, 1944; Leyte, Philippine Islands, September to December, 1944, and San Fernando, Pampanga Province, Luzon, Philippine Islands, January to September, 1945. While on Luzon, he was quartered on the second floor of a native house.

By arrangement with the local and state health departments, the patient is being treated with sulfoxone (Diasone) sodium on an outpatient basis. He must comply with several regulations for modified isolation.³ There must be no children under 18 in the household and children must not be permitted to visit. There can be only a minimum number of adults in the home, there must be no boarders, and adult visitors may not eat or stay overnight in the home. The patient can work only at an occupation in which his contact with other persons is minimal (this patient is a garage employee). He may not shop or attend public functions. He must receive continuous treatment with sulfoxone. These restrictions can be lifted when 12 monthly skin scrapings for acid fast bacilli have been negative. Since the institution of treatment with sulfoxone, there has been complete disappearance of the macules described and no further increase in the anesthetic and hyperesthetic areas. Acid fast bacilli ceased to be demonstrable within three months after treatment was begun.

COMMENT

Aycock¹ based his prediction on experiences with veterans of the Spanish-American War, in whom leprosy appeared from 3 to 32 years after exposure. The duration of stay in foreign foci ranged from 9 months to 32 years, but no information was available as to the nature of actual exposure. In this regard, concerning persons first exposed in adult life, it would appear that neither the length nor the intimacy of exposure is a major determinant but that ordinary unrecognized exposure while in endemic regions can result in the infection of certain susceptible persons. The nature of susceptibility is unknown. In World War I, with minor exceptions, American troops did not serve in endemic regions, and Aycock

found no suggestion that any veterans acquired leprosy as the result of military service in World War I. He found 11 cases in World War II veterans, but none of these appeared to have been the result of service exposure. Except for a report of two cases that developed in tattoos,⁴ I have found no reports of service-connected infections in American veterans of World War II, although the British literature⁵ contains a number of such cases.

2741 Hrd St.

2. Wade, H. W. The Classification of Leprosy. A Proposed Synthesis Based Primarily on the Rio de Janeiro-Havana System. *Internat. J. Leprosy* 20: 429-462 (Oct. Dec.) 1952.

3. Gray, H. H. Hansen's Disease (Leprosy) in California. *California's Health* 11: 73-76 (Oct. 31) 1953.

4. Porritt, R. J. and Olsen, R. E. Two Simultaneous Cases of Leprosy Developing in Tattoos. *Am. J. Path.* 23: 805-817 (Sept.) 19-7.

5. Doyle, J. O. Case of Leprosy Seen in a V. D. Clinic in Britain. *Brit. M. J.* 2: 261-262 (Aug. 1) 1953. Rogers, J. Leprosy. Report on Four Cases. *ibid.* 2: 259-260 (Aug. 1) 1953.

SPECIAL ARTICLE

THE CLINICAL INVESTIGATOR AND HIS ROLE IN TEACHING, ADMINISTRATION, AND THE CARE OF THE PATIENT

Robert H. Williams, M.D., Seattle

Never before has clinical research received such a glorified position or as much financial and spiritual support as today. The public demands it, Congress has provided for it, medical schools clamor for it, and patients not only tolerate it but sometimes request it. In the last 10 years, there has been a pronounced upsurge of public interest in research, and the amount of money provided,¹ especially by the federal government, has increased greatly (fig. 1). The total expenditure for medical research in the United States increased from an annual rate of about 18 million dollars in 1941 to 181 million dollars in 1951. The increase is out of proportion to both the increase in trained medical research manpower and the increase in national income (fig. 2). This should be viewed not as today's excess but as yesterday's deficiency, the present investment in medical research is only about 7 cents per \$100 of national income. An extremely small amount is spent to save lives, compared to that spent for potential destruction of life.

In general, the increased medical research funds have led to a much greater knowledge of diseases and their therapies and have increased the number and quality of teachers. However, in some medical schools certain departments have been accused of putting too much emphasis on research, thereby increasing the administrative duties and decreasing the quality and quantity of teaching and patient care (fig. 3). Medical progress is built on these four pillars, and each should be strong in appro-

From the Department of Medicine, University of Washington School of Medicine.

Presented in part as a presidential address at the annual meeting of the Western Society for Clinical Research, Jan. 29, 1954.

1. Endicott, K. M. and Allen, E. M. The Growth of Medical Research, 1941-1953, and the Role of Public Health Service Research Grants. *Science* 115: 337, 1953.

prate proportion but a satisfactory balance of strength in each of these pillars is often difficult to achieve. It has often been stated that a physician cannot do a satisfactory job as a teacher, investigator, and administrator. It has been maintained that (a) scientists cannot be good physicians or teachers, (b) teachers cannot be good physicians or scientists, (c) administrators cannot be good teachers or scientists, and (d) the administrator need not be a good physician, scientist, teacher, or administrator. Such statements have been belied many times by men

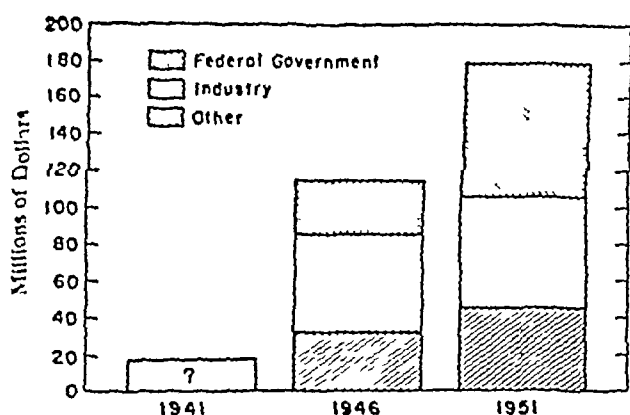


Fig 1—Graph showing the funds spent by the federal government, industry, and other groups for medical research (reprinted with permission from Endicott and Allen)

skilled in all four realms. Many physicians have been inadequately acquainted with the virtues and necessities of each of the four pillars and the value of smoothly integrating them. Rather than being mutually exclusive, each has much to offer the other, and, in the final analysis, they are all concerned with patient care. The role of each of the four major pillars of medical progress will now be discussed.

CLINICAL INVESTIGATORS

Personality Traits—There is no set personality pattern for clinical investigators, they, along with scientists in other fields, show great variety in background, training, objectives, philosophy, and emotions. However, the nature of the work does exert an influence on the type of person attracted and on the development of some of his characteristics. The investigator's background and emotional make-up may influence the type and interpretation of his investigations. This relationship between a scientist's personality and his research deserves further study. In this connection the following ideas expressed by a psychiatrist, Kubie,² are of interest: "the emotional problems which arise early in the careers of young scientists are more taxing than are those which occur in other careers. [he] often reaches maturity after a lopsided early development. In this development he resembles many other intellectuals. A typical history is that an intellectually gifted child develops neurotic tendencies which hamper his early aggressive and psychosexual development. If at this point he is intellectually stimulated by one or another of the emotionally significant adults of his life, he is likely to turn away from athletics and the social life which he finds difficult to more bookish activities. The first step in any program of scientific research is to observe natural phenomena while

taking care not to alter these phenomena by the very process of observing them. In spite of the most meticulous care, however, the ever-present, unconscious forces of the observer color in some degree the glasses through which he makes even simple observations. Therefore it is out of such tinted observations that he develops his scientific theories. It is impossible for an investigator to prevent the intrusion of his unconscious biases. [There is] a subtle interplay of reason and emotion."

Indeed, there are some persons in clinical investigation with emotional complexes of the type just described, but, in the close contacts that I have had with many investigators in departments of medicine, this pattern has seemed to be rare. There is a great variety of persons—some have been outstanding athletes, some leaders in civic activities, and many scholarly, broadly cultured, and possessed with both personal charm and emotional stability.

Though most career clinical investigators have had good academic records, having ranked in the upper part of their medical school class, many are not brilliant. Talent is important depending on how, and how much, it is used. Some persons display threads of scientific brilliance that never become sufficiently interwoven into a tangible pattern. They fail to make significant contributions because of too little coordination and integration of their activities. Successful clinical investigators are notably industrious, but they do not always view their efforts as "work," Osler's masterword in medicine, because they may be engulfed by enthusiastic inquisitiveness or insatiable curiosity and goaded by burning ambitions. The investigator's interests are sustained during times of failure as well as success. With a background of scholarship and training, he exercises imagination and originality in conceiving and organizing his experiments.

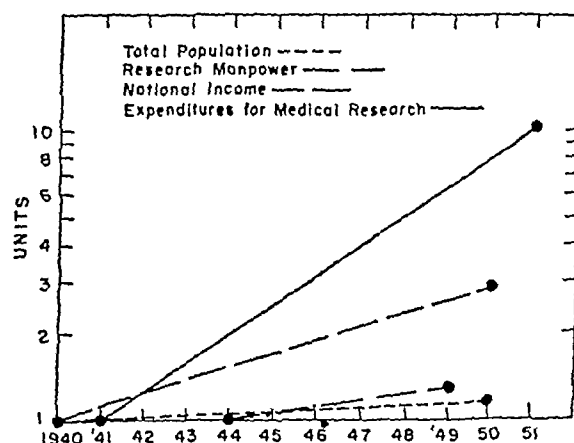


Fig 2—Graph showing relationship of increase in expenditures for medical research and increase in research manpower and national income (reprinted with permission from Endicott and Allen)

These are then conducted with initiative, ingenuity, precision, and thoroughness. He is forever on the alert, looking carefully for both the expected and the unexpected results. With perseverance, he pursues his studies from year to year.

Motivation—The motivating forces for engaging in a career of clinical research are often diffuse and ill-defined. Sometimes, a continuation of natural curiosity in childhood is important. Sometimes, motivation results

from a spirit of dedication and determination to combat a disease that has affected the investigator or a close friend or relative. Occasionally there is only a pseudo-interest in investigation, with a superstructure of craving for distinction and glory; those in this group soon wither. Motivation for clinical investigation may develop while a physician is working as a research fellow with an aim to learn more about a given specialty. The person may

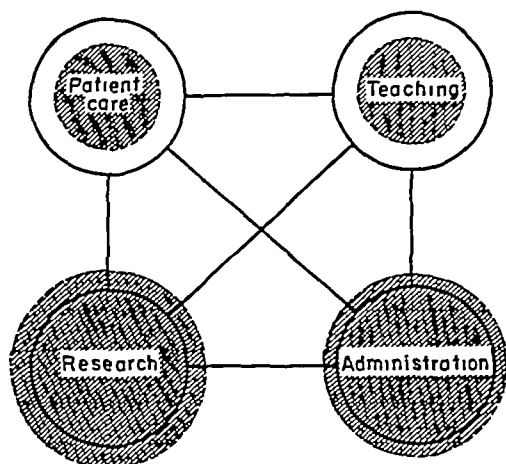


Fig. 3—Chart showing the four pillars of medicine.

discover an intense interest in, and aptitude for, the research he is doing, with appropriate encouragement from his superior, he may be stimulated to continue in research as a career. This perhaps is one of the commonest patterns for clinical investigators, and it fits a good philosophy, that is, one should do what he can do the best and what he enjoys most—these often coincide. A person with a strong desire to be of service to mankind may select the phase of clinical research in which he believes the immediate needs are great. For example, recently in a discussion of Dr. William Lennox under the heading "Leading Men in Science," it was stated that "for him the epileptic patient is not simply the vehicle of a clinically interesting abnormality but, first and foremost, a suffering individual, socially ostracised and deprived of the right to lead a useful, active and happy life."

Training—Training is easier if the person has the appropriate spirit. As Jesus said to Nicodemus, "Ye must be born of the spirit!" Patterns for training are as variable as research objectives. In medicine it is desirable that the physician spend approximately three years of training as a house officer and two years as a research fellow, working under the supervision of a wise, successful, and experienced scientist, as John Finley said, "Nothing succeeds like successors." The research fellowship should be used to learn some of the techniques and also the general principles, policies, and objectives of research. During this interval, the research fellow should receive inspiration and sophisticated critique. Considerable supervision should be received during the first year, but less in the second year. Frequent discussions with the supervisor are helpful, even the most experienced investigator profits from discussions with others about his investigations.

Two years in a research fellowship often will indicate the potentialities in research of an investigator. The sum-

mation of several good attributes does not necessarily mean that the subject will be a good investigator. For example, he may be highly intelligent, industrious, interested, and fertile of ideas, but yet may fail to make significant contributions. Until good ability in investigation has been demonstrated, it is not best for his future progress and happiness, or for society, for him to plan definitely for a career in research.

Relationship to Others—As in other professions with many highly capable men working strenuously under emotional tension, temperamental outbursts, jealousy, or envy may impede headway and interfere with fraternalism and scientific progress. Unwarranted criticisms may be made about another investigator and, indeed, great efforts made to discredit him. Despite our excess epinephrine, we must maintain mental composure.

An occasional investigator, in his eagerness to attain glory, may lose some of his integrity in reporting his observations, or he may fail to give adequate credit to other investigators, earning for himself the title of "scientific bandit." Few ideas are absolutely new. A considerable number of closely allied observations have usually been made by other investigators before a great discovery is announced. Once an appropriate background is developed, the same discovery may be made simultaneously by several investigators. Indeed, some of the preliminary observations may be a greater accomplishment than the discovery itself. Thus, credit often needs to be sprinkled on a long path.

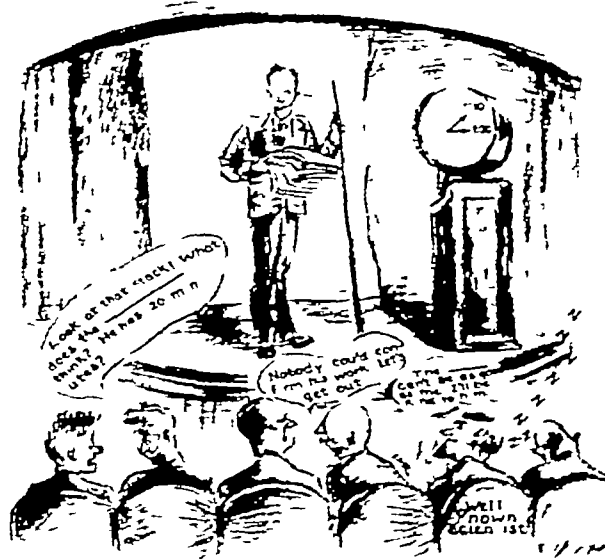


Fig. 4—A scientist presents his research to his peers (reprinted with permission from Steinberg).

Favorable Conditions for the Investigator—In addition to the appropriate ability, spirit, and training, it is important that the investigator also have adequate space, equipment, and supplies. Moreover, it is important to have an atmosphere conducive to work—inspiration from colleagues and a minimum of distractions such as worries about finances and domestic affairs. The un-

knowing sometimes do not have adequate patience with the scientist. They are perplexed by his tenacity of purpose, his perseverance despite setbacks, his spirit of adventure, insatiable curiosity, and love of science. Claude Bernard said, "Those who do not know the torment of the unknown cannot have the joy of discovery."

The scientist needs ample freedom in the problems that he investigates and the approach that he uses. He should not have his interests twisted just to get more readily available financing nor should administrative restraints hamper unduly his research.

Arthur has said, "Indeed it is not in the turmoil of social life, nor through academic chats nor laboratory gossip that we come to see the light, that interpretations become clear, that experiments are conceived, and conclusions reached. It is through solitary, profound and sustained meditation." With meditative gestation, one can weave the isolated fabrics of scientific observation into a well-suited pattern for clinical application.

The clinical investigator receives stimulation from both patients and the searching questions of students. The statement "Necessity is the mother of invention" certainly applies in clinical investigation. Observations of patients continuing to suffer, despite the best we have to offer, goad the investigator to ardent efforts toward relief. This stimulus keeps his goals clearly defined, incites tenacity of purpose, and nurtures progress toward fruition.

PATIENT CARE AND CLINICAL INVESTIGATION

Fusion of the Science of Medicine with the Art of Medicine—Through a lack of understanding there has been, as stated by Atchley,⁴ a "false legend that a scientific training with its inculcation of logic and critique smothered man's finer feelings and led to cold and wholly objective attitudes." Actually, when a humanist bathes in scientific knowledge, the humanism is not washed away but acquires greater charm and a deeper rooting as a result of greater wisdom and understanding. The art of medicine can reign supreme only when there is a richly humane application of the best scientific knowledge to the problems of the patient, in the absence of scientific information the art stands as a weak and ghostly structure. Contrariwise, the physician blessed with great scientific skills, but not imbued with the humanistic spirit or lacking appropriate goals and morals, can but briefly bask in the halo of the art of medicine.

The necessity for acquiring a great deal of scientific knowledge and critique has engendered psychogenic dysphasia in some clinicians. Many clinicians, particularly medical school graduates of more than two decades ago, have been inclined to label as "theoretical" and non-pragmatic any research that does not immediately disclose a superior test or treatment, although a much better understanding of disease and the rationale of specific therapy might be derived from it. Actually, such information is quite "practical," because it provides a logical basis for handling each patient in accordance with the individual problems he presents. The value of acquiring understanding, as well as wisdom, is emphasized in

Proverbs 4:7 "Wisdom is the principal thing, therefore get wisdom and with all thy getting get understanding."

Research of Today the Practice of Tomorrow—With the development of astute clinical investigators, the interval from scientific discovery to routine clinical use has been shortened considerably. They have also helped in getting the research of the basic scientists to reap fruition in clinical medicine much more rapidly and abundantly. The intellectual and other resources of the basic scientist and the clinical investigator have been combined for mutual benefit and the good of mankind. With the acquisition of greater scientific critique the physician has become a better student and teacher.

Care of the Patient—Very few clinical investigators engage exclusively in research. They usually must take very good care of the patient whether or not he presents any research interests, this is a responsibility enjoyed by most clinicians. For optimal effectiveness in clinical research and teaching, an adequate number of patients is necessary and the investigator must be an astute clinician. Excellent care of the patient must be given foremost consideration, with research and teaching being coincidental. This care is a necessity for good research, the best teaching is by precept and example. As Peabody said, "The secret of the care of the patient is in caring for the patient." The physician must have a very sincere interest in and loyal concern for the patient and use a kind and gentle approach. Too often there is a fleeting and unconvincing sympathy with incongruity of words and actions, when there is genuine, deep-rooted sympathy and true compassion, it is calming and comforting to the patient and his family. Even though there are provided hormones, antibiotics, and other tangible therapies that achieve astonishing results, humane considerations must not be neglected. In conditions in which such objective treatment is to no avail, humanistic talents must be exercised to the utmost. The physician's attitudes, abilities, and actions must be such that the patient develops respect, faith, and warm regard for him. If the patient does not develop deep-rooted confidence in his physician and a genuine spirit of close friendship, the most brilliant plans may be ineffective or rejected.

Particularly after the physician has become well-acquainted with the patient, it is helpful for him to have a cheerful and friendly spirit without sacrificing his concern or poise. The approach to and care of the patient must be adjusted to the patient's personality traits, previous environment, background, and his present illness. A psychodynamic approach is often needed and is very important. The physician must be thorough, precise, and wise in the execution of diagnostic and therapeutic procedures. He must give serious consideration to even minute details that may make the patient more comfortable and give him a better peace of mind. Many of the patient's anxieties may be alleviated by appropriate explanations of some of the manifestations of his disease, along with the rationale for and possible benefits from the more major diagnostic and therapeutic procedures. It is impatience, thoughtlessness, and neglect along these lines that often lead to corrosion of rapport and impairment of the efficacy of some of the physician's technical skills. Many patients prefer sacrificing some science for human-

⁴ Atchley, D. W. The Healer and the Scientist, Saturday Review 37:7, 1954

ism The development of scientific skill should not cause us to forget kindness, compassion, and warm regard for the patient. Here the physician today is in a much better position than were his forefathers, because the acquisition of medical knowledge, and a better understanding of it, has promoted simplicity, clarity, frankness, and honesty in talking with the patient, no longer need he dwell in a mythical, mysterious, vague, and supercilious atmosphere. He must offer as much reassurance, encouragement, and hope as the situation justifies. To bring happiness and to assuage anguish helps in the healing process, particularly in patients with marked emotional disturbance and mental stress. It is well to heed Corinthians 1, 13: "And now abide faith, hope, and love, these three, but the greatest of these is love." Usually the healing cults make sure that these abide, and this accounts for many of the dramatic testimonials offered. When the physician is too nihilistic and discouraging, the patient may, in desperation, seek aid from quacks, frequently with ill consequences somatically and financially. On the other hand, the physician must not be persuaded to engage in adventurous and illogical therapies that do more harm than good.

Clinical Investigation—The idea of doing research on patients should not provoke the alarm that it sometimes does. Two of the meanings given for "research" are "careful search" and "studious inquiry." In day-to-day routine practice, every good physician gives his patient a certain type of therapy, observes the patient carefully, and may shift the dosage or may try another type of therapy—thus it is a type of experimentation. The better trained the physician is in investigative critique, the more effectively can he set up an objective plan of study. While experimentation on patients is the rule, it should not be carried too far.⁵ Although it is difficult to draw a sharp limit to permissible procedures, it is important that the limits be neither too restrictive nor too loose, either extreme would be harmful to society. Numerous factors are concerned with any major experiment and all of these must be weighed carefully. The patient's consent should be obtained, especially whenever the investigation has possibilities of danger. "The patient, however humble and however ill, in whatever degree derelict and forlorn, has sacred rights which the physician must always put ahead of his burning curiosity," writes Bean.⁶ Obtaining the patient's consent is not necessarily a differentiation between right and wrong. Some procedures may be legal technically but wrong morally and some illegal but right morally. The laws are not complete or perfect, and the interpretation of some of them varies in the best legal circles. There are two additional steps that are helpful in making a decision. First, the investigator should test his reservoir of knowledge, philosophy, and integrity by frankly asking himself if he, under similar circumstances, would be willing for another investigator to do the experiment on him and his immediate family. An affirmative answer does not necessarily constitute justification, but it is a major step in that direction. Second, he should get the advice and opinion of several well-qualified persons, thereby strengthening scientific and moral judgment. Indeed, it is advisable to have a standing *clinical investigative committee to which can be referred*

problems that may have significant hazards. In the better clinical investigative circles, the question of illegality and moral necrosis in research rarely present themselves. Moreover, the most intelligent patients tend to be the most willing to cooperate in clinical research.

The following plan has often been used by myself and many others in testing new drugs:

- 1 Extensive pathological, biochemical, physiological, and pharmacological studies are made in animals with the upper limit of dosage being many times that ever considered to be necessary in man.
- 2 Patients with far-advanced cancer or some other such hopeless disease are given very small doses, with progressive increments to levels several times those ordinarily regarded as necessary for the desired effect. Careful observations are made of the clinical status of the patient and of laboratory studies, particularly those that might indicate damage to the bone marrow, liver, and kidney.
- 3 The drug is given to the usual type of patient whom it is desired to treat, beginning with relatively small doses and progressively increasing them. It is best not to start treatment of more than a few patients until the long-range effects have been studied. Even if such studies have been conducted in animals, some of the

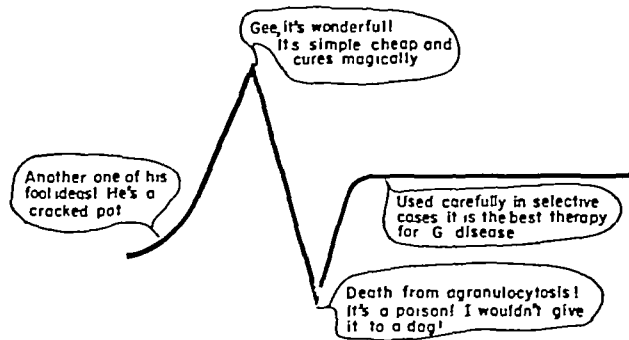


Fig. 5—Oscillations in the development of a drug.

ill effects may not appear in that species or not be noted. In the process of testing the clinical applicability of a given compound, it is important that the analyses be critical, but not hypercritical. Figure 5 illustrates some of the common reactions of investigators, along with extreme swings in enthusiasm that may accompany the clinical study of new drugs. Even if the responsible investigator exercises appropriate conservatism in his claims, some other investigators or overzealous pharmaceutical companies may cause an unjustified mushrooming of interest. However, congratulations are due the better pharmaceutical companies for their caution in the release of new drugs, often in the face of enormous pressure from practicing physicians, legislators and others. Special appreciation is owed the Food and Drug Administration for doing a superb job in protecting the public from dangerous drugs and for preventing fraudulent claims regarding other compounds.

TEACHING AND CLINICAL INVESTIGATION

Since the doors of the clinical domain have in the last few decades, been opened far wider to the knowledge of the basic scientists and since basic science research

⁵ Shimkin M. B. Problem of Experimentation on Human Beings. Research Workers' Point of View. Science 117: 265, 1952.

⁶ Bean W. B. A Testament of Duty. Some Structures on Moral Responsibilities in Clinical Research. J. Lab. & Clin. Med. 39: 3, 1952.

has been conducted abundantly in clinical areas, there has been a great transformation in the teaching of medicine. As it is in research and patient care that "the atmosphere is experimental, the mood is inquiring, the goal is understanding."⁷ With the replacement of empiricism and mysticism by knowledge and understanding, unfounded dogmatic dictums and traditional superstition have been shoved into the background. Now that medicine is reaching maturity as an applied science, adequate evidence must be provided before a concept is accepted as established.

Although the full-time staff should perform a considerable amount of teaching and plan the organization of the teaching and research, since they have had special training, experience, and skill in this line, it is very important to utilize the services of as many as possible well-qualified physicians engaged primarily in the practice of medicine—the so-called part-time staff. When the full-time staff attempts to do all the teaching, the load is so great that research tends to be neglected, with consequent deterioration of teaching in quantity and in quality—the latter partly because enthusiasm, one of the keys to suc-

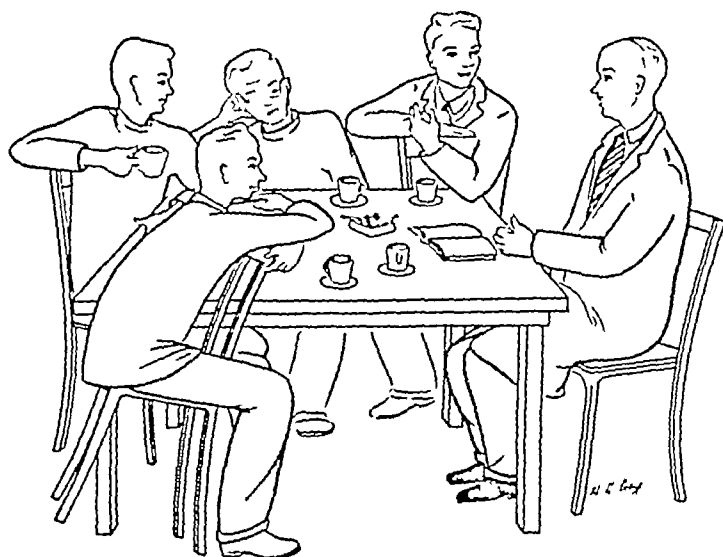


Fig 6—The staff member too can learn

cess in teaching, is lost when the routine burden becomes heavy and long. The part-time staff members often volunteer their time and, as a result of their extensive experience in practice, add certain approaches that may be touched on too lightly by the full-time staff. The experience also accomplishes a good deal in other ways. 1. The part-time physician increases his knowledge and is stimulated by students and colleagues. 2. By helping to interpret the objectives and accomplishments of the medical school to the community, he contributes to the progress of medicine both spiritually and financially. My experience with the physicians in this group has stimulated warm regard and profound appreciation for them.

With the rapid growth of medical knowledge, much of which is made readily available to every physician, the task of keeping abreast of all the information exceeds the capacity of the best pair of cerebral hemispheres. Students often acquire facts that are not known to the physician-in-chief, or certain other staff members, such as supplementary knowledge, when diplomatically presented,

should be welcomed. It behooves the staff member to become a leading student, this can be the only firm basis for engendering respect, admiration, and warm regard; his many more years of training and experience will have netted him a vast storehouse of knowledge that he can apply with great proficiency. In contrast, he may be branded as a "stuffed shirt" and impostor if he attempts to create an atmosphere of omniscience by making an occasional formal appearance before the students, garbed as a superauthoritarian and surrounded with a bodyguard of associates and residents to "stiff-arm" any challenge of this authority until he can drop his few pearls and then remain aloof until the "next show."

There should be frequent check-ups on the efficiency of the various teaching programs. Although this can be done in many different ways, one of the most effective is to obtain the students' evaluations of the lectures and all aspects of the physician's performance on ward rounds. Whereas students do not know as well as the staff what they should be taught, they are the ones who can tell best if they are learning what the instructor is attempting to teach. If the teaching is ineffective, efforts should be made to correct it by changing the methods and/or the duties of the teacher.

With the rapid progress of medicine and the ever-increasing additions and modifications, it is more important that the student be taught broad concepts, organized plans of approach using scientific critique rather than many, many more facts than he can understand or retain. Efforts should be made to stimulate his curiosity, to encourage him to develop inquisitiveness, and to teach him some of the general principles of research and to illustrate some of these principles by having him participate in some aspect of research. It is important for him to get some perspective of research, even if he is to enter general practice in a small town. For example, consider the status of cortisone, particularly in the first year after it was introduced. Many papers were written but few reviews, and very little was in textbooks. Thus, the practitioner could choose between (a) not using the drug or (b) analyzing original articles critically. He could have gotten his information from an expert at a medical meeting or postgraduate course, but he could have acquired this much more efficiently if he had had adequate basic training.

Considerable alteration in our teaching curriculum is needed, particularly to promote better integration of the teaching in various departments, many conjoint exercises are indicated. Although a patient usually presents himself with complaints indicating a disorder in a functioning unit,⁸ such as respiration or micturition, there usually are morphological, biochemical, and physiological alterations. For appropriate therapy there may be necessitated a good understanding of bacteriology, drug action, surgery, x-ray, or of any or all of the sciences taught in medical school. Not only the student would benefit from a greater coordination of teaching, but the instructor, in studying what the various departments have to offer, would also profit by obtaining a better over-all perspective in teaching. A few patients should be studied even in the first year of medical school. The problems of patients serve as a stimulus for reading books or journals, with some disorders, considerable knowledge may be ac-

⁷ Atchley, D. W. The Orientation of an Undergraduate Medical Curriculum, *Science* 104: 67, 1946.

quired by prolonged close observation of the patient, but in others proportionately more time is needed for reading. The physician can do his best job in teaching by handling the patient and his problems superbly.

Postgraduate Training—A physician may have an excellent training as a student and house officer, but, if he engages busily in practice and neglects continuous nurturing of his talents with scientific journals and frequent replenishment at medical meetings or medical centers, he will eventually discover that he is distressingly behind, and it may then be necessary for him to take off several months for a complete overhauling. Some of these physicians are the "cotton-farmers of medicine" (Cotton farmers know that instead of planting cotton every year they should periodically plant some such thing as soybeans to enrich the land, but this constitutes some loss of profit and it is postponed from year to year until the land is "worn out.") Pruning of the obsolete twigs of information on the scientific tree of knowledge and grafting on new facts are perennial duties. The acquisition of a good critique as a medical student and house officer makes "the take" much easier.

ADMINISTRATION AND CLINICAL INVESTIGATION

Growing pains have been associated with administration. Similar difficulties were encountered in teaching with the introduction of students to the wards by Osler, and later the appointment of a staff for full-time work. Also there was resentment to and failure of appreciation of the full-scale application of basic research to the solution of patients' problems. Now, however, with better understanding of the values of the pillars of medicine they are mutually respected and welcomed by most physicians as valuable additions. The main obstacles to good administration have been the failure to recognize how much it has to offer to teaching and research and the failure to realize its scope and the type of person required to handle it. A good administrator of teaching and research must be more than a good business manager, economic expert, efficient logistician, and skilled personnel director. He must be intimately acquainted with the problems and objectives of teaching and research in order that he may have an appropriate philosophy and goal, otherwise, he may do a beautiful job administering, but in the wrong direction—just as Roy Riegel who, in making a beautiful run in the Rose Bowl, headed for the wrong goal. Although we do not consider making a man a football coach unless he has played football, it is evident that the best player may not make the best coach. Likewise, in medicine there are good investigators who make poor administrators, but there are also "triple-threat" men who are adept at teaching, investigation, and administration. Such persons are especially valuable. The art of effective administration in clinical medicine requires great versatility, including intimate knowledge of teaching and research. However, all of these skills are very valuable and the sooner the merits of each are recognized, respected, and appreciated the greater progress can be made in each direction, the happier the participants will be, and the richer will be the benefits to mankind. The cause for good administration has been hurt somewhat by the deplorations by leading educators of researchers

becoming administrators. For example, Alan Gregg stated "The extraordinary feature of medical research in America in our times is the frequency with which demonstrated ability in research is rewarded by being extinguished." Whereas this does apply in some instances, in other instances the specific investigator, by assuming administrative responsibilities, may do less investigation, research in general may profit enormously. For example, in my opinion it was the administrative feats of William H. Welch as much as anything else that projected and sustained the ascension of the Johns Hopkins Medical School to heights of glory. Arriving first on the scene, with a background of scholarship, broad interests, and great vision, he interested a group of young teachers and investigators in coming to that school, nurtured their activities in an optimal manner, and planned many new adventures that were to become patterns for the world in



Fig 7—The next show begins

teaching and research. Indeed, he remained "close to the steering wheel" for approximately 50 years. Such a leader invokes many chain reactions with far-reaching benefits.

Two factors, especially, indicate the great need for good administration in teaching. First, the enormous volume of medical knowledge requires a large staff, very good planning, and excellent organization of the teaching program in order to attain optimal efficiency. Second, it is very important that the teaching given by members of the same and other departments be coordinated and integrated. There should be satisfactory continuity with neither too many omissions nor repetitions. It is also important for the administrator to assure the appropriate orientation, familiarity with and approval of the objectives, and the maintenance of a good and enthusiastic spirit among students and staff members.

A good department of medicine should have as its chief a man engaged full time in teaching, research, and

associated duties. It is also best to have full-time staff members to head units in allergy, arthritis, cardiology, dermatology, gastroenterology, hematology, infectious diseases, kidney diseases, metabolism, neurology, and pulmonary diseases. They are all phases of internal medicine, but have varying degrees of deviation from the central core—perhaps cardiology being closest and dermatology furthest away, each has its own phase of teaching and research that must be given special consideration. It is generally best for these units to be well integrated in one department, yet permitted considerable freedom of operation. With appropriate organization and good spirit, a considerable amount may be gained by this symbiosis and relatively little is lost.

In the large departments of the better medical schools, research has assumed proportions of big business, utilizing a large number of personnel, great quantities of expensive equipment and supplies, extensive amounts of laboratory space, high-quality animal quarters, a research ward, etc. Many problems arise concerning obtainment of funds, objectives in specific research, allocation of space and other items, recruiting of personnel, interpersonal relationships, responsibilities to patients, and interrelationships of teaching and research. More than a quarter of a million dollars a year may be spent by one department. Indeed, so much is at stake, both tangible and intangible, that it behooves an institution to be most careful in choosing a good executive paying particular attention to the honor and glory accorded, the duties involved and the remuneration. An executive officer of a department should have as much assistance as possible from business offices and supersecretaries. In order to do the best job as an administrator, he must continue to engage personally in research and teaching. In addition to giving his position a better flavor, it makes him a better administrator, because he is more aware of the problems, develops a more realistic philosophy, and can formulate the objectives more clearly and accurately. With these accomplishments and with the intermingling with other teachers and investigators, there is greater mutual respect and understanding of the value of smooth coordination of teaching, research, and administration, with less risk of undue infringement on the freedom of other investigators and teachers. The administrator should not be one viewed by the investigator as a "necessary evil" who must be tolerated ("the more he stays out of the lab the better"). The administrator should not visualize the investigator as being too narrow in knowledge to associate closely with him and his colleagues. Between the better administrators and investigators no schism exists. With the novice investigator, through misunderstanding, a problem sometimes develops regarding his freedom. As stated by Kidd:⁸ "The varying capability of individuals sets limits on freedom. Full freedom is not an immutable natural right of all investigators. There is at times a tendency to identify 'the freedom of science' with the right of any investigator to complete independence. Freedom is predicated upon the exercise of mature judgment by trained minds. The right

of an investigator to freedom in his work, i.e., to plan his work and to receive the resources to carry it out, is earned by achievement. Junior investigators must learn techniques and develop competence by working in collaboration with persons who have demonstrated their ability before extensive freedom of action and resources can be profitably put at their disposal."

Many of the great discoveries have been based on hypotheses that originally seemed illogical to most persons other than the discoverer. Indeed, one reason why many major discoveries are made by young persons is that they have not yet learned many of the traditional dogmatic dictums that run counter to their hypotheses. An example of this was related by Dr. George Minot, Nobel prize winner for his work on the use of liver in the treatment of pernicious anemia. After spending several months at the Peter Bent Brigham Hospital in what seemed to the physician-in-chief, Dr. Henry Christian, as futile attempts to show that liver was efficacious, Dr. Minot was called into the office of the chief and told something like the following: "Minot, if you think liver is any good in the treatment of anemia why don't you transfer your patients to the Huntingdon Hospital [a less active, cancer hospital] and you can give them liver until your heart is content. You are upsetting all the nurses and dietitians in the place." This, coming from the chief, left Dr. Minot somewhat disconsolate, but on second thought he decided that it might be a good idea. He transferred three of his patients. One of them was an Italian patient who, curiously enough, loved raw liver and ate several times the quantity that had been recommended. A reticulocyte response was observed. This was the clue that ultimately led to the isolation of vitamin B₁₂. Dr. Henry Jackson told me that in the earlier phases of Dr. Minot's study, Dr. Francis Peabody asked him why Dr. Minot continued to test the effects of liver when it had already been "proved" to be ineffective.

Research Granting Agencies—Many of the large funds for research are granted on the recommendation of a board of scientists who analyze carefully the research proposal and the qualifications of the investigators. Sometimes not enough freedom for the investigator is permitted when the judgment for grant awards is based predominantly on the way the application is written, particularly the experimental design, rather than on the background and characteristics of the investigator. As Richter⁹ mentioned, experimental designs tend to breed "team research," which "serves a purpose in developing and applying ideas, it rarely produces new ideas." Large teams increase the quantity of research, but sometimes at the expense of quality. A poor investigator may write an excellent design of an experiment or vice versa. Indeed, some of the best observations may be unrelated to the proposed experiments. Careful study should be given both to the investigator and to his planned experiments, varying the degree of emphasis as indicated.

One great concern about the present large scale of financial support for research is whether it can be maintained. In the event of sudden withdrawal, the impact may be disastrous to research and teaching in some medical schools. The grantors, as well as medical schools, have taken steps to help avoid this.

⁸ Kidd, C. V. Research Planning and Research Policy. Scientists and Administrators, Science 118: 147, 1953.

⁹ Richter, C. P. Free Research Versus Design Research, Science 118: 91, 1953.

Effect of Standardization by Other Agencies—The various boards for certification of medical specialties have done a great deal to shape graduate teaching and have influenced research considerably. Though many benefits are derived from such standardized programs, often there is too little flexibility for optimal progress. House officer training programs are much too stereotyped. As Christian¹⁰ states "uniformity usually is based on scaling up the inferior and scaling down the superior, with resultant mediocrity."

Some medical journals have overstandardized the body of papers, but have not standardized the portion that certainly should be, the references. Albright and others have demonstrated how sparkling individuality in medical prose lends greater interest, charm, and clarity than the usual superconventionality.

PANORAMA OF MEDICINE

Medicine has a noble heritage with an abundant supply of intellectual giants, many of whom have glorified their profession and reached the empyrean. Surgery, drug therapy, irradiation, psychodynamic approaches, and other methods have done an enormous amount to stimulate faith, assuage anguish, give hope and courage, replace sorrow with happiness, and bring about a much better state of health. Many eulogies to the profession have been given, of which the following examples may be cited.

If a doctor's life may not be a divine vocation, then no life is a vocation, and nothing is divine.—Stephen Paget.¹¹

For their patience with the stupid and the cowardly,
for their quiet devotion to the inevitable truth,
for their constant courage and unquenchable hope,
for their cheerfulness even in the darkest hours,
for their faith in humanity even when they see it at its worst,
for what they have sacrificed and what they have forgiven,
I for one am deeply grateful.

—Claude M. Fuess¹²

There are men and classes of men that stand above the common herd, the soldier, the sailor and the shepherd not infrequently, the artist rarely, rarer still, the clergyman, the physician almost as a rule. He is the flower (such as it is) of our civilization, and when that stage of man is done with, and only remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has such as is possible to those who practice an art, never to those who drive a trade, discretion, tested by a hundred secrets, tact, tried in a thousand embarrassments, and what are more important, Heracleian cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.—Robert Louis Stevenson.¹³

We of the medical profession like to respond to the beckoning call of greatness, experiencing titillation of our ego and resonation of our pride as we bask in the traditional glory of our noble profession, but how many of us have personally emanated enough brilliance in science and richness in humanism to dwell within the halo of so much praise and honor? In working with our patients, do we have enough understanding, deep-rooted sympathy, genuine interest, and loyal concern? When the problem is difficult and progress is slow, do we impart enough cheerfulness, warm friendliness, hope, and en-

couragement? With derelict, forlorn, and unreasonable patients, do we exhibit enough patience, tact, kindness, gentleness, forgiveness, generosity in time and attention, and faith in humanity? Do we give too much consideration to financial rewards? Do we have as much scientific knowledge and understanding as we should? Do we have enough spirit of fraternalism but very little jealousy and envy? You know as well as I that many of us are guilty in one way or another. Many of us want to be called great but do not want to task the powers of our minds and bodies enough to be great. In addition to attempting to correct our faults, we are obligated to do our share in increasing the stature and glory of our profession by nurturing with increasing intensity the roots of the science, our debt is not repaid solely by the honest, intelligent, and sound practice of medicine.

ANTICIPATION IN MEDICAL PROGRESS

Research—Whereas all phases of research will continue to expand markedly, there will be an enormous increase in clinical investigation, including studies of basic phenomena and ones requiring very refined techniques. Experience has shown the need for studying the function of organs in their natural status. One may anticipate emphasis on (a) the effect of physical agents, e.g., ultrasonics and cosmic rays, (b) enzyme systems, including enzyme adaptation, (c) physicochemical properties of genes and other individual intracellular components, and (d) the value of submicroscopic studies of normal and diseased tissue. The parade of drug testing will increase enormously, and there also will be more extensive studies on the long-range effects, antagonisms, augmentations, and synergisms, drugs with improved specificity in actions will be utilized. Surgery will make considerable progress, with plastic and other corrective procedures emphasized and with relatively less use for physiological alterations such as hypertension, thyrotoxicosis, benign prostatic hypertrophy, and cancer. There will be a considerable increase in the money available for research, much more security, better organization and long-range planning, better integration, and more collaboration.

Patient Care—Clinical research will be more abundantly and effectively practiced by all physicians. Diagnoses will be better established, the type of therapy will be more specific, and its effects will be measured much more quantitatively. The science of medicine will be blended more smoothly with humanism, and the latter will be practiced with greater skill. There will be more systematic study of the environmental and social influences than ever before. Enormous progress will be made in the understanding of psychobiological integrations and the role of psychodynamics in disease. Medical economics will become much more satisfactory for patients and the average physician. There will be a great increase in the small clinic type of practice.

10 Christian H. A. Present Day Undesirable Trends in the Training of Physicians and of Teachers of Internal Medicine. *Ann. Int. Med.* 33: 533, 1950.

11 Paget, S. cited by Fuess, C. M. As Others See You. *New England J. Med.* 243: 35, 1950.

12 Fuess, C. M. As Others See You. *New England J. Med.* 243: 415, 1950.

13 Stevenson, R. L. Works. New York: Charles Scribner & Sons, 1909, vol. 16, p. 91.

Teaching—There will be a considerable increase in the understanding of the mechanisms of disease and rationale for therapy. The student will become far more familiar with the principles of research and will develop an appropriate scientific critique. Problems of patients will be considered earlier in the medical school curriculum and this will be the text for teaching simultaneously all factors concerned with a functioning unit, e g, respiration and micturition. There will be many more conjoint exercises in medical school with much better coordination and integration of the teaching of different departments. The over-all objectives will be clearer, and there will be greater teamwork in their accomplishments. The student will be indoctrinated better with respect to the philosophy of medicine. There will be more emphasis on acquiring the appropriate approach and background for working out a patient's problem and less didacticism. There will be a great increase in the quality and quantity of postgraduate training.

It may be stated that while we can be proud of our rich accomplishments of the past, we look very hopefully to the future for making great contributions to human welfare and happiness. This will necessitate a greater integration of teaching, research, and administration directed toward the ultimate goal of better care of the patient in every respect.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

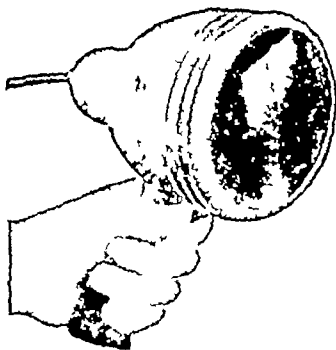
The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

RALPH E. DE FOREST, M.D., Secretary

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The Hague Cataract Lamp, Model 395 (also referred to as the A O Hague Cataract Lamp) is designed to utilize, for diagnostic purposes, a band of ultraviolet radiation that adjoins the violet portion of the visible spectrum. If the lamp is lighted five to seven minutes before use, so as to reach equilibrium, it gives strong radiation around 375 m μ . Shorter wavelengths are absorbed by a special glass filter.



Hague Cataract Lamp, Model 395

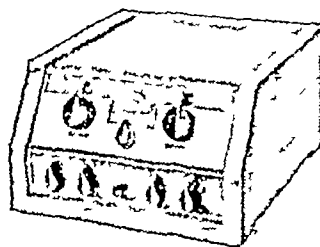
Transmitted wavelengths give fluorescence in the lens of the eye. Radiation from this lamp will also bring about fluorescence in merbromin, fluorescein, thimerosal, riboflavin, quinine sulfate, skin, fingernails, and normal tooth substance.

The apparatus requires 60 cycle alternating current at 120 volts and draws 100 watts. It is equipped with a handle and is connected by a cable to the transformer. The lamp and cord weigh 1 kg (2 lb 3 oz.), the transformer weighs 5.1 kg (11 lb 7 oz.). Packed for shipment the entire assembly measures 46 by 43 by 33 cm (18 by 17 by 13 in.) and weighs 9.5 kg (21 lb).

Audivox Audiometer, Model 7B

Audivox, Inc. (Successor to Western Electric Hearing Aid Division), 123 Worcester St., Boston 18

The Audivox Audiometer, Model 7B, is a pure tone audiometer for diagnostic purposes, which is available either as a portable (7BP) or as a desk (7BD) model. Packed for shipment it measures 42 by 48 by 29 cm (16½ by 19 by 11¼ in.) and weighs 12.3 kg (27 lb 4 oz.). The shipping weight includes the following accessories: double headband, power cord, audiogram cards, spare fuse, matched phones, air receiver cords, instruction manual, and wrench kit. The following accessories are not included in the shipping weight: microphone, bone conduction receiver and cord, and adapter for bone receiver.



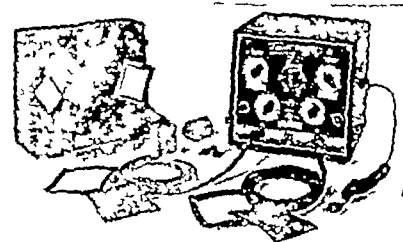
Audivox Audiometer, Model 7B

The instrument measures 30.5 by 41 by 20 cm (12 by 16 by 8 in.) and weighs 9.6 kg (21 lb 4 oz.). It requires 60 cycle alternating current at either 110 to 120 volts or 220 to 240 volts; the power consumption is 35 watts.

Paust Electronic Stimulator, Model 50-C

Paust Manufacturing Co., 6011 Ridge Ave., Chicago 26

The Paust Electronic Stimulator, Model 50-C, is a generator of low voltage currents that stimulates the contraction of normally innervated voluntary muscles. It is small and light enough to be carried about and set on a table. When the case is closed, it measures 34 (height) by 27 by 23 cm (13¼ by 10¾ by 9 in.) and weighs 6.2 kg (14 lb). When the case is opened by removing the front, the slanting control panel is exposed.



Paust Electronic Stimulator, Model 50-C

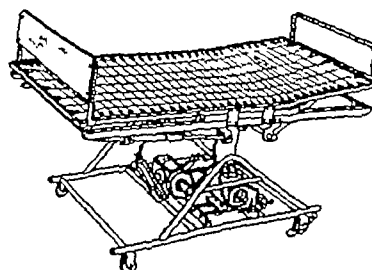
The apparatus requires a source of 60 cycle alternating current at 110 to 125 volts and draws 20 watts.

The control panel has two jacks marked "No. 1 Patient Circuit" and "No. 2 Patient Circuit." Between them is a switch marked "Circuit Control," which is so connected that in one position it causes the two patient circuits to operate simultaneously, whereas in the other position it causes them to alternate. For each of the two patient circuits a separate "Intensity Control" in the form of a dial is provided. In addition, there is a frequency control, a seconds-time control, a timer, a monitor light, and a place for a fuse.

Burns Rocking Bed, Model V-3

C. A. Burns, P. O. Box 1020, Denton, Texas

The Burns Rocking Bed, Model V-3, is intended to provide artificial respiration for patients with partial paralysis of the respiratory musculature. The frequency of oscillation is adjustable from 13 to 30 oscillations per minute. The amplitude of oscillation, which also is adjustable, can be made as great as 27 degrees, while the mean position can be either a positive or a negative angle, that is, the patient's head can be higher than his feet most of the time or lower than his feet most of the time.



Burns Rocking Bed Model V-3

Crated for shipment, the bed measures 81 (height) by 198 by 96 cm (32 by 78 by 38 in.) and weighs 136 kg (300 lb). The motor requires 60 cycle alternating current at 110 volts and draws 270 watts.

MEDICAL EDUCATION in the UNITED STATES and CANADA

FIFTY FOURTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

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Introduction

At the Baltimore meeting of the newly organized American Medical Association in May, 1848, the Association received a report from its Committee on Medical Education, appointed the previous year, comparing medical education in the United States at that time with its counterpart in Europe. The committee indicated that there had already been evidence of improved curricula in some of the American schools as a result of the establishment of the Committee on Education and its activities. Since that time the medical profession has received an annual report, at first from its Committee on Education, then from the Council on Medical Education established in 1904, and since 1921 from its Council on Medical Education and Hospitals. These reports to the A M A gradually evolved into the annual published report on medical education in the United States and Canada. The current report is the 54th annual compilation prepared by the staff of the Council on Medical Education and Hospitals and covers the period from July 1, 1953, to June 30, 1954.

This report includes data derived from official sources concerning schools of medicine and matters of information pertinent to medical education. Such a compilation of data would not be possible without the cooperation of medical school administrative officials and others. Due appreciation is extended by the Council on Medical Education and Hospitals to the many persons who have provided the information on which the current report is based.

The significance of intercommunication in stimulating experimental advances in medical education has been highlighted during the past year by a number of important events. The first of these was the publication in the summer of 1953 of the results of the resurvey of medical schools under the title "Medical Education in the United States at Mid-Century."¹ The information in this volume presented a comprehensive summary of the current

activities and functions of a medical school and included a study of the costs of educating a medical student. It clearly indicated the multitudinous and complex activities of many schools where strict determination of the cost of medical education is exceedingly difficult. Furthermore, the relationship between the cost of basic medical education and the indirect cost of research, together with general trends in medical school financing, has been presented in a manner that has been most useful in the effort to bring about a clearer delineation of the various facets of institutional financing. Conclusions and recommendations presented at the end of each major section of the volume have stimulated thoughtful discussion and further self-appraisal on the part of many medical schools.

Another factor was the publication of the companion volume to the mid-century medical school survey under the title "Preparation for Medical Education in the Liberal Arts College."² This report by the subcommittee on preprofessional education of the Survey of Medical Education presented a stimulating and challenging picture of value to both students and teachers. It was indicated that it is undesirable to distinguish the preprofessional student from other liberal arts students. The volume presents many facets of preprofessional education that aid in bridging the gap between general and specific educational institutions. It highlights the need for cooperative planning and mutual understanding on the part of preprofessional and professional faculties in achieving the breadth of background and knowledge desired in professional personnel.

The First World Conference on Medical Education held in London Aug. 22 to 29, 1953, under the auspices of the World Medical Association in collaboration with the World Health Organization, the Council for Inter-

1. Deitrick, J. E., and Berson, R. C. Medical Schools in the United States at Mid-Century. New York, McGraw-Hill Book Company, Inc., 1953.

2. Severinghaus, A. E., Carman, H. J., and Causton, W. E., Jr. Preparation for Medical Education in the Liberal Arts College. New York, McGraw-Hill Book Company, Inc., 1953.

national Organizations of the Medical Sciences, and the International Association of Universities, was another of the intercommunication events of widespread importance. The general theme of the conference was undergraduate medical education. Over 600 registrants representing 62 countries participated. The material presented stimulated excellent thought-provoking discussions. It was of interest to observe that, regardless of the nation concerned, the basic qualities being sought in persons desiring to enter the medical profession are much the same the world over. The basic background and preparation of students for admission to the study of medicine has a fairly common denominator, while the methods, techniques, and actual needs in medical training itself vary greatly, depending upon the objectives being sought in various parts of the world to meet the specific medical and health needs of the different areas. The proceedings of this conference are to be published by the Oxford University Press.³

From the standpoint of medical education in the United States, one of the most significant and valuable developments in intercommunication in recent years was the first annual institute conducted by the Association of American Medical Colleges the week prior to the 64th Annual Meeting of the Association in Atlantic City during October, 1953. This first annual institute centered its attention on the fields of physiology, biochemistry, and pharmacology. Well over a year of careful preparation for the institute under highly competent leadership made it an outstanding experience for those who attended. It was a sound, sincere self-analysis on the part of leaders in these fields to evaluate the current teaching and to interchange concepts as well as project experimental ideas. The "Report of the Teaching Institute on Physiology, Biochemistry and Pharmacology"⁴ has recently been released and merits widespread study. There has been gratifying indication that representatives of the various medical schools attending the institute succeeded in communicating their enthusiasm for similar exchanges and discussions on the local level as they returned to their respective schools. The Association of American Medical Colleges will conduct its second teaching institute centering attention on pathology, immunology, and genetics a week before its annual meeting at French Lick Springs, Ind., in October, 1954.

The Congress on Medical Education and Licensure held its sesquicentennial session, February 7 to 9, 1954. The chairman of the Council on Medical Education and Hospitals at that time summarized the 50 years of Council activity.⁵ Problems of general current interest in the field of medical education and licensure were presented. A panel discussion was held on professional orientation in undergraduate medical education. A half day session was allocated to a report of the principal findings of the

American Medical Association survey on postgraduate medical education, followed by a series of panels on (1) the objectives of postgraduate medical education, (2) how to achieve these objectives, and (3) the facilities, faculty, and financial requirements of postgraduate programs.

Another important event was the publication of the eighth revision of the "Objectives of Undergraduate Medical Education"⁶ emanating from the Association of American Medical Colleges. Although still a document under development and revision, it has stimulated much discussion and analytical evaluation. Since the objectives of undergraduate medical education are of such vital interest and importance in the development of the young physician preparing for the current and future practice of medicine, it is believed that they should be presented in this annual report on medical education so that they may be more widely read and analyzed by the medical profession and others. It will be apparent to the reader that the medical educators who have been developing this statement on objectives believe that the creation of sound attitudes and understanding of professional and ethical principles are basic responsibilities of medical education, just as are the acquisition of scientific knowledge, the development of essential professional habits, and the achievement of basic skills. It is furthermore clearly indicated that undergraduate medical education is an effort to create a foundation on which graduate experience and specialization may subsequently be developed. The following is a direct quotation of the "Objectives of Undergraduate Medical Education" as they have been presented in the eighth revision:

Undergraduate medical education must provide a solid foundation for the future physician's development. It should not aim at presenting the complete, detailed, systematic body of knowledge concerning each and every medical and related discipline. Rather, it must provide the setting in which the student can learn fundamental principles applicable to the whole body of medical knowledge, establish habits of reasoned and critical judgment of evidence and experience, and develop an ability to use these principles and judgments wisely in solving problems of health and disease.

Undergraduate medical education cannot achieve these aims if the student is relegated to a passive role. It must provide incentive for active learning on the part of the student. This can best be done by giving him definite responsibility in real day-to-day problems of health and disease. This responsibility must of course be carefully graded to the student's ability and experience and must be exercised under careful guidance by the faculty.

Given incentive to learn and guidance toward the grasp of principles, with the problems of health and disease as a frame of reference, the student will build the necessary foundation for his career in medicine, be it practice (general or limited), teaching, research or administration.

In working toward this fundamental objective, undergraduate medical schools must strive to help the student to acquire basic professional knowledge, establish essential habits, attain clinical and social skills necessary to the best utilization of that knowledge, and develop those basic intellectual attitudes and ethical or moral principles which are essential if he is to gain and maintain the confidence and trust of those whom he treats, the respect of those with whom he works and the support of the community in which he lives.

These aims are obviously not distinctly separable, but mutually interdependent. Altogether they summarize the desirable characteristics of the responsible professional person. Medical education is attempting to produce

³ Proceedings of First World Conference on Medical Education, London, England, Oxford University Press, to be published.

⁴ Association of American Medical Colleges. Report of the First Teaching Institute on Physiology, Biochemistry, and Pharmacology, 1953, J M Educ 28: (July, pt 2) 1954.

⁵ Welskotten, H. G. Fifty Years of Council Activity report of the Council on Medical Education and Hospitals, J A M A 154: 1200-1203 (April 3) 1954.

⁶ Association of American Medical Colleges. The Objectives of Undergraduate Medical Education Eighth Revision J M Educ 28: 57-59 (March) 1953.

With the aims indicated above as a basis for specification, the more detailed objectives of undergraduate medical education have then been outlined ⁶

Medical Schools

APPROVED MEDICAL SCHOOLS

With the approval of the programs of the University of North Carolina and the University of Puerto Rico there are now 74 fully approved four year medical schools and six approved schools of the basic medical sciences in the United States (table 1). Approval of the program of the University of British Columbia Faculty of Medicine has increased the number of approved medical schools in Canada to 11, with 1 approved school of basic medical sciences (table 2).

Data in these tables include years of premedical training required for admission in the 1955 class, the number of students enrolled in each class during the 1953-1954 academic year, the number of part-time or special students working toward M D degrees, and the number of students graduated during the period from July 1, 1953, to June 30, 1954. Data for the Canadian schools include, in addition, enrollment of students in the first and second premedical years, students enrolled in a fifth medical year, and those in a required intern year, where indicated. A more detailed discussion of this material appears in other sections of this report.

The name of the current dean or executive officer is listed in the final column. Since publication of the last report, changes of chief administrative personnel have been made in 10 of the 92 medical and basic science schools of the United States and Canada. New executive officers have been appointed by the University of California at San Francisco, the Medical College of Georgia, University of Illinois, Washington University, Cornell, State University of New York at New York City, Rochester, Southwestern, the University of Washington, and Dalhousie University.

MEDICAL SCHOOLS IN DEVELOPMENT

The University of California at Los Angeles will admit its fourth class in 1954 and will be eligible for consideration for approval as a four year medical school. The development of this institution's program has been followed closely by the Council, but, in accordance with long standing policy, approval is not granted to any medical school developing a four year program until representatives of the Council survey it after instruction has been instituted in all four years of the medical course. In order to clarify the eligibility for internship appointments of the first University of California at Los Angeles senior group, the following action has been adopted by the Council:

Students who will graduate from the School of Medicine of the University of California at Los Angeles in 1955 will be considered as if they had graduated from an approved medical school. Hospitals approved for intern training will not lose their approval if they accept these students for internship.

The University of Mississippi is completing the construction program of its new hospital and medical school building at Jackson. It is anticipated that the first regular third year class will be registered in the fall of 1955,

although a small third year group may be enrolled in January, 1955, if developments make that possible. The faculty for the clinical years is now being organized. The University of Miami School of Medicine will admit its third year class in 1954 and plans to have all four years in operation by the fall of 1955. Currently, the faculty and the curriculum for the clinical years are being developed.

The legislature of Missouri has appropriated \$13,500,000 for the building program now underway at the University of Missouri, 9 million dollars of this is for hospital construction, \$3,100,000 for a medical science building, and the remainder for a steam plant, laundry, and nurses' home. The 441 bed hospital is currently under construction, and excavation for the medical science building is underway. It is hoped that the developmental program will permit the 1953-1954 entering class to continue on into its third year of training at the University of Missouri.

Last March the Albert Einstein College of Medicine of Yeshiva University reported that excavation was far advanced for the foundation of their new College of Medicine. They anticipate that progress on construction will be sufficiently rapid to permit admission of a first year class in 1955. A number of initial key faculty appointments have been made. A section of the teaching hospital center was scheduled for opening July 1, 1954, the service buildings for the center and the 511 bed Nathan B. Van Etten hospital are completed and the Abraham Jacoby Hospital Unit is scheduled for completion Jan 1, 1955.

The University of Florida at Gainesville has received a 5 million dollar appropriation from the 1953 legislature to develop the medical science building that will constitute the first unit of the College of Medicine. Their schedule called for initial contract awards for building foundations during the spring of 1954. The dean has been appointed and according to current planning the school will admit its first class in 1956. At West Virginia University planning for their new medical center continues. The heating plant is currently under construction, but no definite date has yet been advanced for registration of the first third year class. In North Dakota the legislature has directed that the School of Medicine admit a third year class by 1955 and that a full four year program be in operation by 1956.

On Aug 11, 1954, an announcement was made to the people of New Jersey that a corporation has been formed within the state to be known as the "Seton Hall College of Medicine and Dentistry." Correspondence from the college indicates that this is the initial step in the formation of a program of study in medicine and dentistry to be conducted in the Jersey City Medical Center. They express the hope that the new college will be ready to accept students for the fall of 1955.

The University of Kentucky's board of trustees on June 1, 1954, formally sanctioned the establishment of a medical school in Lexington to cost about 25 million dollars. The university will request funds for the project from the Kentucky General Assembly. Last March, the Kentucky Medical Sciences Development Foundation was formed to promote interest in the project and to

TABLE 1—Approved Medical Schools and Schools of the Basic Medical Sciences in the United States

		Students by Classes, 1933-1934											
		Four Year Medical Schools	1933 Prerequisite by Years	Fresh man	Sopho more	Junior	Senior	Total	Part Time Special, and Irregular Students	Graduates, July 1, 1933 to June 30, 1934	Executive Officer		
Ala	1	Medical College of Alabama Birmingham	3	80	74	80	61	295	3	61	James I. Durrant, M.D., Dean	1	
Ark	2	University of Arkansas School of Medicine Little Rock	3	92	70	84	72	318	3	72	Hayden C. Nicholson, M.D., Dean	2	
Calif	3	College of Medical Evangelists Loma Linda Los Angeles	3	95	87	90	73	345	1	92	Harold Shryock, M.D., Dean	3	
	4	University of Southern California School of Medicine Los Angeles	3	68	60	70	69	267		111*	Gordon F. Goodhart, M.D., Dean	4	
	5	Stanford University School of Medicine Stanford San Francisco	3	58	62	60	57	237		64	Winsor Cooper Cutting, M.D., Dean	5	
	6	University of California School of Medicine San Francisco	3	70	76	81	70	307		74	John B. Jaken, M.D., Associate Dean	6	
Colo	7	University of Colorado School of Medicine, Denver	3	82	67	77	79	305	1	81	Robert C. Lewis, Ph.D., Dean	7	
Conn	8	Yale University School of Medicine, New Haven	3	70	78	82	64	303		63	Vernon Lippard, M.D., Dean	8	
D C	9	Georgetown University School of Medicine, Washington	4*	120	113	114	108	455		107	Francis M. Forster, M.D., Dean	9	
	10	George Washington University School of Medicine Washington	3	100	90	82	78	350		78	Walter A. Bloedorn, M.D., Dean	10	
	11	Howard University College of Medicine Washington	4	79	75	75	70	299		69	Joseph L. Johnson, M.D., Dean	11	
Ga	12	Emory University School of Medicine, Atlanta	3	72	73	70	70	285		70	Richard Hugh Wood, M.D., Dean	12	
	13	Medical College of Georgia, Augusta	3	70	76	76	73	295	9	73	Harry B. O'Neal, M.D., Dean	13	
Ill	14	Chicago Medical School, Chicago	4	72	75	64	69	280		137*	John J. Sheinin, M.D., President	14	
	15	Northwestern University Medical School Chicago	3	131	129	137	136	533	2	136	Richard H. Young, M.D., Dean	15	
	16	Stritch School of Medicine of Loyola University, Chicago	3	88	84	80	84	336		84	John F. Sheehan, M.D., Dean	16	
	17	University of Chicago, the School of Medicine, Chicago	3	72	71	68	69	280	3	69	Lowell T. Colleshall, M.D., Dean of Division of Biological Sciences	17	
	18	University of Illinois College of Medicine, Chicago	3	167	159	172	169	667		169	Granville A. Bennett, M.D., Dean	18	
Ind	19	Indiana University School of Medicine, Bloomington Indianapolis	3	151	153	133	138	575	3	139	John D. Van Nuys, M.D., Dean	19	
Iowa	20	State University of Iowa College of Medicine, Iowa City	3	110	114	109	116	459	2	116	Norman B. Nelson, M.D., Dean	20	
Kan	21	University of Kansas School of Medicine, Lawrence Kansas City	3	111	117	123	105	456	3	105	W. Clark Wescoe, M.D., Dean	21	
Ky	22	University of Louisville School of Medicine, Louisville	3	100	96	93	92	381		92	J. Murray Kinsman, M.D., Dean	22	
La	23	Louisiana State University School of Medicine New Orleans	3	125	96	119	108	448	1	107	William W. Frye, M.D., Dean	23	
	24	Tulane University of Louisiana School of Medicine, New Orleans	3	135	121	132	128	516		128	M. E. Lapham, M.D., Dean	24	
Md	25	Johns Hopkins University School of Medicine, Baltimore	Degree	75	69	73	77	294		77	Philip Bard, Ph.D., Dean	25	
	26	University of Maryland School of Medicine and College of Physicians and Surgeons Baltimore	Degree	104	102	101	97	404		96	H. Boyd Wylie, M.D., Dean	26	
Mass	27	Boston University School of Medicine, Boston	3	72	72	70	65	288		66	James M. Faulkner, M.D., Dean	27	
	28	Harvard Medical School Boston	2	115	120	148	148	631		148	George Packer Berry, M.D., Dean	28	
Mich	29	Tufts College Medical School, Boston	Degree	117	112	112	108	449		110	Joseph M. Hayman, Jr., M.D., Dean	29	
	30	University of Michigan Medical School Ann Arbor	3	204	161	178	155	728		155	A. C. Furstenberg, M.D., Dean	30	
	31	Wayne University College of Medicine, Detroit	3	75	67	70	65	277	1	65	Gordon H. Scott, Ph.D., Dean	31	
Minn	32	University of Minnesota Medical School, Minneapolis	3	127	115	118	130	400		133	Harold S. Diehl, M.D., Dean of Medical Sciences	32	
Mo	33	St. Louis University School of Medicine, St. Louis	3	123	117	121	130	491	8	132	James W. Colbert, Jr., M.D., Dean	33	
	34	Washington University School of Medicine St. Louis	3	80	85	99	90	366		96	Carl V. Moore, M.D., Dean	34	
Neb	35	Creighton University School of Medicine, Omaha	3	70	76	78	70	300	2	70	F. G. Gillick, M.D., Dean	35	
	36	University of Nebraska College of Medicine Omaha	3	86	81	84	83	344		92	James P. Tolman, M.D., Dean	36	
N Y	37	Albany Medical College Albany	3	69	49	62	62	212		63	Harold O. Wiggers, Ph.D., Dean	37	
	38	University of Buffalo School of Medicine Buffalo	4	71	67	71	70	279		70	Stockton Kimball, M.D., Dean	38	
	39	Columbia University College of Physicians and Surgeons New York	3	120	121	113	111	465		111	Willard O. Rappaport, M.D., Dean	39	
	40	Cornell University Medical College New York	Degree	84	84	89	83	337		83	E. Hugh Luckey, M.D., Dean	40	

N O	41	New York Medical College, Flower and Fifth Avenue Hospitals, New York	4	129	119	113	478	112	Ralph F. Snyder, M.D., Exec. Dean	41
	42	New York University College of Medicine, New York	3	130	115	123	530	121	Carlton McFwen, M.D., Dean	12
	43	State University of New York College of Medicine, New York City	3	150	148	143	573	131	Howard Potter, M.D., Teling Dean	43
	44	State University of New York College of Medicine, Syracuse	3	70	72	70	285	60	William R. Wilbur, M.D., Dean	41
	45	University of Rochester School of Medicine and Dentistry, Rochester	3	71	70	69	280	1	Donald G. Anderson, M.D., Dean	15
	46	Duke University School of Medicine, Durham	3	70	70	70	82	1	Wilbur O. Davidson, M.D., Dean	46
Ohio	47	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	3	51	45	50	310	2	O. C. Carpenter, M.D., Dean	47
	48	University of North Carolina School of Medicine, Chapel Hill	3	60	60	60	48	1	W. Reece Berryhill, M.D., Dean	48
	49	University of Cincinnati College of Medicine, Cincinnati	3	90	84	88	352	80	Stanley F. Dorst, M.D., Dean	49
	50	Western Reserve University School of Medicine, Cleveland	3	81	82	87	335	2	Joseph T. Weism, M.D., Dean	50
	51	Ohio State University College of Medicine, Columbus	3	150	150	130	575	133	Charles A. Dunn, M.D., Dean	51
	52	University of Oklahoma School of Medicine, Oklahoma City	3	100	90	82	380	81	Mark R. Everett, Ph.D., Dean	52
Ore	53	University of Oregon Medical School, Portland	3	75	73	67	207	21	D. W. F. Baird, M.D., Dean	53
	54	Hahnemann Medical College and Hospital of Philadelphia	3	105	97	92	303	90	Charles L. Brown, M.D., Dean	54
	55	Jefferson Medical College of Philadelphia	3	171	163	163	600	103	George Allen Bennett, M.D., Dean	55
	56	Temple University School of Medicine, Philadelphia	3	131	123	125	510	1	William N. Parkinson, M.D., Vice President and Dean	56
	57	University of Pennsylvania School of Medicine, Philadelphia	3	127	117	131	502	127	John McK. Mitchell, M.D., Dean	57
	58	Woman's Medical College of Pennsylvania, Philadelphia	4	51	40	41	181	43	Marion Fay, Ph.D., Dean	58
Pa	59	University of Pittsburgh School of Medicine, Pittsburgh	3	100	80	91	381	4	William S. McFrey, M.D., Dean	59
	60	Medical College of South Carolina, Charleston	3	80	72	68	275	55	John T. Outtino, M.D., Dean	60
	61	University of Tennessee College of Medicine, Memphis	3	219	153	150	750	159	O. W. Hyman, Ph.D., Vice President and Dean	61
	62	McHenry Medical College, Nashville	3	65	62	67	257	3	Daniel T. Rolfe, M.D., Dean	62
	63	Vanderbilt University School of Medicine, Nashville	3	53	50	48	200	54	John B. Youmans, M.D., Dean	63
	64	Southwestern Medical School of the University of Texas, Dallas	3	100	93	102	304	98	A. J. Gill, M.D., Asst. Dean	64
Tex	65	University of Texas School of Medicine, Galveston	3	101	154	150	560	133	Chauncey D. Lonke, Ph.D., Free Director	65
	66	Baylor University College of Medicine, Houston	3	93	80	83	308	1	Stanley Olson, M.D., Dean	66
	67	University of Utah School of Medicine, Salt Lake City	3	51	40	53	108	5	John Z. Hower, M.D., Dean	67
	68	University of Vermont College of Medicine, Burlington	3	51	47	48	180	1	George A. Wolf, M.D., Dean	68
	69	University of Virginia School of Medicine, Charlottesville	3	70	70	68	292	70	Thomas Harrison Hunter, M.D., Dean	69
	70	Medical College of Virginia, Richmond	3	81	83	105	372	100	John B. Truslow, M.D., Dean	70
Wash	71	University of Washington School of Medicine, Seattle	3	75	74	70	287	1	George N. Angstadt, M.D., Dean	71
	72	University of Wisconsin Medical School, Madison	3	87	70	73	318	0	William S. Middleton, M.D., Dean	72
	73	Marquette University School of Medicine, Milwaukee	3	101	95	90	301	5	John S. Hirschbock, M.D., Dean	73
	74	University of Puerto Rico School of Medicine, San Juan	3	50	41	45	181	1	E. Harold Ilhman, M.D., Dean	74
	Totals			7,223	6,850	6,727	27,780	121	6,801	
Wisc	Schools of Basic Medical Sciences									
	1	University of Mississippi School of Medicine, University	3	57	50		113	5	David S. Penkratz, M.D., Dean	1
	2	University of Missouri School of Medicine, Columbia	3	41	41		85		Roseco L. Pullen, M.D., Dean	2
	3	Dartmouth Medical School, Hanover	3	21	22		40	1	Rolf O. Syverson, M.D., Dean	3
	4	University of North Dakota School of Medicine, Grand Forks	3	33	32		70	5	Theodore H. Harwood, M.D., Dean	4
	5	University of South Dakota School of Medicine, Vermillion	3	31	32		63	1	W. J. Harl, Ph.D., Dean	5
W Va	6	West Virginia University School of Medicine, Morgantown	3	92	29		61		Edward J. Van Iorio, M.D., Dean	6
	Totals			280	212		198	12		
	Grand Total (Four Year Schools and Schools of Basic Medical Sciences)			7,149	7,068		29,277	173		

1 Veterans, 10 semester hours
 2 In special classes
 3 Figures represent two class years
 4 Intern year requirement discontinued

receive funds from private sources, with its immediate objective being to file articles of incorporation and formulate building plans tentatively for July 1, 1955

It is of interest to indicate that if all of the projects described above are carried through to satisfactory completion that potentially 10 four year medical schools may be added to the list of four year medical schools during the period of the next five to six years. In addition, during the course of the past year correspondence has come to the attention of the Council staff indicating that serious consideration is being given to the possible development of three other new medical schools in the United States

reorganization of outpatient teaching so as to afford continuity of student-patient experience, reduction of didactic instruction in both basic medical sciences and clinical fields, incorporation of minor specialty instruction into broader experiences in major clinical areas, improved supervision of preceptorship opportunities, and readjustments of time schedules through adoption of a quarter system in the clinical years or modifying the length of the academic year

Reorganization of certain parts of basic medical science teaching is now either accomplished or underway at Alabama, Emory, Indiana, Creighton, Albany, Western Reserve, Oregon, Temple, South Carolina, Baylor,

TABLE 2—Approved Medical Schools and Approved School of the Basic Medical Sciences in Canada

Medical Schools	1955 Pre-medical Requirement by Years	Students by Classes, 1953-1954							Graduates July, 1953, to June 30, 1954	Totals*
		First Pre medical year*	Second Pre medical year*	Fresh man	Sophomore	Junior	Senior	Additional year		
Alta 1 University of Alberta Faculty of Medicine, Edmonton	3			53	50	53	64		236	61
B C 2 University of British Columbia School of Medicine, Vancouver	3			60	53	53	57		233	54
Mnn 3 University of Manitoba Faculty of Medicine, Winnipeg	3			61	64	65	77	61	267	53
N S 4 Dalhousie University Faculty of Medicine, Halifax	3			53	53	52	49	51	212	53
Ont 5 Queen's University Faculty of Medicine, Kingston	2	64		59	60	64	59	53	295	53
6 University of Ottawa Faculty of Medicine, Ottawa	3	44		64	40	48	40	45	204	47
7 University of Western Ontario Faculty of Medicine, London	2			60	57	60	60		237	61
8 University of Toronto Faculty of Medicine, Toronto	2	128	118	160	150	145	160		605	160
Que 9 McGill University Faculty of Medicine, Montreal	3			113	103	114	110		440	110
10 University of Montreal Faculty of Medicine, Montreal	Degree			120	103	95	99	90	423	99
11 Laval University Faculty of Medicine, Quebec	Degree	120		140	119	85	135	135	479	134
Totals		356	118	949	869	844	916	63	3,031	896
School of Basic Medical Sciences										
Sask 1 University of Saskatchewan School of Medical Sciences, Saskatoon	2			83	32				65	
Grand Total (Four year schools and Saskatchewan)		—	—	932	901	844	916	63	3,096	—

* Intern and premedical enrollment not included in total column

DEVELOPMENTS OF MAJOR IMPORTANCE IN MEDICAL SCHOOLS

Analysis of the annual reports of medical schools submitted to the Council on Medical Education and Hospitals for the academic year 1953-1954 affords confirmation of the intellectual ferment constantly underway in these professional schools in the efforts of medical faculties to improve educational opportunities for medical students. Curriculum study and reorganization is being actively conducted in many schools. Curriculum changes being instituted include correlation and improved integration of basic science departmental activities, overcoming departmental isolationism, better correlation of basic medical science instruction with clinical teaching,

Marquette, Utah, and the University of Washington. At Alabama better integration of basic medical sciences and clinical sciences is being developed. Emory has consolidated its basic medical science departments of anatomy, biochemistry, physiology, pharmacology, and bacteriology as university departments under a director of basic medical sciences. Indiana has developed more closely integrated teaching in biochemistry, microbiology, and pathology, and Creighton has established a course in infectious diseases correlating medicine, microbiology, preventive medicine, and public health. Creighton also has correlated medicine, pathology, microbiology, biochemistry, and microanatomy in its teaching of laboratory diagnosis. During recent years this correlated and

cooperative approach to the teaching of laboratory diagnosis has been developed in several medical schools

Baylor has instituted a program of concurrent teaching of anatomy, physiology, and biochemistry throughout the first year. No examinations are conducted during a given quarter, but comprehensive examinations are conducted at the end of each of the three academic quarters. The school reports gratifying results as measured in terms of student interest, quality of work, and improvement in the degree of maturity and responsibility exhibited by students. The effect of the frequent competitive quizzing with the psychological pressures inadvertently created by different departments on student interest, maturity, quality of work, and responsibility is a matter worthy of more serious consideration by all medical faculties in scrutinizing their methods of student evaluation.

Vermont has instituted radical changes in its first year program correlating physiology with anatomy and biochemistry. Departmental identity has been retained, but the material taught by these departments is related at any given time. At Marquette, teaching in pathology and bacteriology has been carefully correlated. Thus the trend to reduce rigid departmental "pigeon holing" and to utilize departments as cooperative factors in administrative convenience seems to be well established in many institutions.

On the other hand, in keeping with the need for proper balance of responsibility, Albany has separated physiology and pharmacology into two separate departments, and New York Medical College reports a similar development. At the University of Chicago, radiology, which has been a division of medicine, has been established as a separate department. Maryland has established a new department of preventive medicine and rehabilitation. Albany has separated anesthesiology from surgery as a new department.

In line with the increasing emphasis on the simultaneous multidisciplinary approach to the teaching of clinical fields from the concept of man in his total environment, many interesting experimental programs are being conducted. For instance, at Boston University, through a program made possible by a Commonwealth Fund grant, the departments of obstetrics, pediatrics, psychiatry, and preventive medicine sponsor a home study service. One-third of the senior class is assigned to this service for a period of four months during which each student has an opportunity to observe patients over longer periods of time and in outpatient, ward, and home environments. At Louisville, a Kellogg Foundation grant has made possible the establishment of an elective program called the "Family Health Program," which begins in the third year. Student volunteers are assigned to selected families as student family physicians closely supervised by a team of instructors representing the various clinical specialties. Albany has introduced a family health care program and continues its general practice preceptorship program, both of which have proven such satisfactory experiences that they are being continued and expanded.

Vanderbilt has instituted a program of social and environmental medicine requiring regular visits in the homes of patients. The student acts as a family health advisor among selected families and continues his con-

tact throughout his entire undergraduate four years. This program is designed to aid the student in learning the human aspects of illness as he observes the patient as a person, a member of the family unit, and of society and helps to create an early understanding of the principle and meaning of the physician-patient relationship and its significance in diagnosis and treatment.

Western Reserve has completed the second year of pioneer experimentation in radical curriculum revision that is being scrutinized with interest by medical educators both here and abroad. They find as a part of their curriculum study that there is room for great improvement in the care of ambulatory patients, and that this aspect of medical care assumes even greater importance in undergraduate teaching in view of the fact that new drugs make it possible to treat many persons in the outpatient department who were formerly admitted to ward beds. Although similar observations have been widespread, adequate readjustments to the changed teaching value of the outpatient aspect of medical care are in general lagging. It is the outpatient clinic in which the physician can best organize the group concerned with the care of the patient, including medical specialists, the nurse, the social worker, and all others who contribute to medical care, into a unified team. Because of the amazingly rapid changes in medicine emanating from the research accomplishments of recent years, medical care, of necessity, must always remain fluid so as to take advantage of these new developments without delay. Since the whole problem of medical care is inextricably interwoven with teaching medical students, interns, residents, and physicians, medical schools are challenged constantly to insure the most exemplary care in their teaching hospitals and clinics, for the finest of medical care is the core of good clinical teaching.

The rapid increase in the number and importance of medical specialties during recent years has posed difficult problems in teaching schedules, particularly in the outpatient clinic. In many outpatient departments students have been assigned to a few weeks on medicine, similar periods on surgery, pediatrics, and obstetrics and gynecology. Then in rapid succession assignments carry the student through such specialties as dermatology, neurology, psychiatry, ophthalmology, orthopedics, urology, and so on. Such a kaleidoscopic experience has lacked continuity of patient care throughout even a single illness and makes it difficult to develop the sense of responsibility for the patient as a person, which is one of the major objectives in medical education.

A number of medical schools are, therefore, reorganizing outpatient clinic instruction in a variety of ways so that the student is assigned to patients rather than specific clinics in order to provide this continuity of patient study. At the University of Pennsylvania, for instance, the student works day by day on some given service, such as medicine or surgery, but this is merely for the purpose of maintaining a proper balance in his experience and for the assignment of new patients. Once the patient and his student-physician have made their first contact, the student carries that patient throughout the full cycle of his illness regardless of what special diagnostic procedure or treatment may be required.

A similar system has been in operation since 1952 at the University of Oklahoma,⁷ where students are assigned concurrently to all departments in the outpatient clinics and may follow their patients completely without losing the advantage of the "follow through" as they did in the traditional block system of assignment. Cornell has conducted a somewhat similar plan for several years. Wherever this type of program has been carefully instituted and well supervised, faculties are convinced that it is basically sound teaching, and there is evidence that the outpatient experience is far more satisfactory than the more traditional block type of clinic assignment.

During recent years some medical educators have voiced concern over the belief that the fourth year in some medical schools did not seem to offer the same challenging experience to the medical student as has been presented during the first three years. However, with these newer approaches to outpatient clinic teaching, the development of home care and hospital extension programs, preceptorships, additional elective clinic assignments, and elective research opportunities, the fourth year of medicine would appear to be assuming its potentially rightful place as the richest and most challenging one in undergraduate experience.

TABLE 3 —Recapitulation of Estimated Funds Available to Medical Schools, 1954-1955

(Funds for construction and operation of major clinical facilities not included)	
Category	Amounts
Budgeted funds and appropriations	\$ 93,405,312
Funds for miscellaneous projects	4,975,812
Research grants from outside agencies	43,383,600
Teaching grants from outside agencies	6,874,411
Total	\$148,639,201

As a note of caution in the development of these potentially valuable programs, it is important to indicate certain problems that may be associated with them. One of the first and most important obligations in undergraduate medical education is adequate supervision of the medical student. Family health care, hospital extension programs, preceptorships, and outpatient activities will be genuinely valuable experiences for the medical student only if planned with exceeding care and if they include all of the prerequisites of a true learning situation. While the potentialities are outstanding, it should be an objective to place the student in his true situation as a learner. He should be subjected to typical as well as to atypical problems. He should be under the supervision of persons who, through precept and example, aid him in developing the attitudes as well as the knowledge requisite in good medical care. Each school undertaking such experimental programs has a real responsibility in recognizing and fully appreciating the hazards as well as the advantages that may accompany them. Through careful planning, adequate selection of personnel, close supervision, and repeated evaluation every possible effort should be made to insure that the potential hazards are minimized and the advantages fully realized.

Albany Medical College reports that arrangements have been made with their teaching hospital to the effect

that the hospital now aids in providing financial support for part of the school's clinical department budgets. This arrangement is based on recognition of the fact that the excellence of medical care is directly related to the activities of the medical college personnel who in turn attract highly competent house staff with resultant over-all benefit to the hospital and its patients. Both the University of Southern California and the College of Medical Evangelists receive substantial appropriations from the Los Angeles County Hospital in recognition of the professional services furnished through the activities of their clinical faculties in the supervision and care of patients associated with their teaching duties.

Medical education has also been enhanced by the completion of, or initiation of, new physical facilities and remodeling of older buildings. During the past year, medical schools report completed capital construction for basic medical sciences totaling \$27,384,000. In this same period, \$38,686,400 is reported for the initiation of basic medical science facility construction. Completed construction of hospital facilities in connection with medical schools for the 1953-1954 period totals \$31,099,574 and during the same period construction of hospital facilities has been initiated totaling \$65,197,446. The schools also report that \$1,226,000 was expended in newly completed medical student dormitory construction and that \$6,130,000 is being expended on dormitory construction now underway.

Although there are many other experiments and developments taking place in this field, those described illustrate the most interesting and significant trends in undergraduate medical education.

MEDICAL SCHOOL FINANCING AND ESTIMATED FINANCIAL SUPPORT

For the past several years the annual report of the Council on Medical Education and Hospitals has presented data on the financial support of medical schools. This information is based on the projected budgets of the medical schools for the next year so that estimates presented in the following material represent 1954-1955 budget figures. The questionnaire requested (1) projected budgets exclusive of hospital or outpatient department costs, (2) grants for research, or (3) grants for teaching from outside agencies, and (4) special projects involving major expenditures not included in any of the above categories. Funds involved in the items excluded from the basic operating budget are separately listed in the final grand total (table 3).

Because of the many variables involved in determining medical school financing it is not possible to state with certainty that all schools have interpreted their data in the same manner. It is obviously difficult to divorce some aspects of medical service from teaching, because in the clinical fields, in particular, they become inextricably interwoven. Furthermore, it is difficult to fully present true comparative budgets between medical schools because of the very nature of their differences in organization, differences in basic teaching and research activities, differences in their facilities, differences in the relationship of the schools with their teaching hospitals, and the variable methods utilized in financing faculty members teaching in the clinical departments.

⁷ Bird, R. M., and Wolf, S. Teaching Internal Medicine at University of Oklahoma School of Medicine. A Program for Undergraduates, J A M A 154: 408-411 (Jan 30) 1954.

One example of this latter problem is illustrated in the report of a school with a relatively low estimated budget, just under \$500,000. In this institution tuition income is equal to approximately three-quarters of the total budget income. However, the budget of this school is largely restricted to financing its administrative functions and its basic medical science departments with almost the entire cost of teaching in the clinical fields being carried by the affiliated teaching hospital through the full-time staff that it supports. This school, therefore, does not present any data in its budget covering monetary value of the service rendered to its undergraduate teaching program by its faculty in the clinical departments. Its clinical departmental personnel conduct a very active research program that receives support from outside grants that actually exceed the total estimated budget covering primarily its administrative and basic medical science programs. If the budget of this school were to be made strictly comparable to that of the average medical school that supports both basic medical science and clinical departments it would be necessary to add the evaluation of the salaries paid by the affiliated teaching hospital to its faculty members in clinical departments. In this particular instance such a readjustment would almost double the basic budget estimate of the school. While this represents only one of the difficult problems associated with comparative analysis of medical school budgets it does, however, aid in a better understanding of why this school reports a "cost per student" factor considerably lower than the average presented by schools where all of the cost factors in education are adequately and accurately included. At the other extreme, it would appear that an excessively high "cost per student" in an institution might represent the inclusion in the budget of factors that on close scrutiny should be chargeable to research or special activities other than that of medical education per se.

For the academic year 1954-1955, the basic budgets of all of the medical schools in the United States total \$93,408,312. On the basis of classification of schools according to the nature of their ownership, 41 private schools have budgets totaling \$46,180,088, 36 state-owned schools have budgets of \$44,186,508, and 3 municipally owned schools account for \$3,041,716. This is the eighth successive year in which the medical schools report a major increase in available operating funds, the current total representing an increase of \$5,999,312. Part of the increase is accounted for by the addition of one newly approved four year school with a budget of \$880,000. This sum should be subtracted from the total increase to make possible comparison with the figures representing the increase in 1953-1954.

Although the basic budgets of medical schools for 1954-1955 represent an increase of \$5,999,312 over that of 1953-1954, it is to be noted that 21 schools report budget decreases totaling \$2,672,217. Ten of the institutions reporting decreased budgets are privately owned, 10 state owned, and one is a municipal medical school. The total of \$93,408,312 represents basic operating costs and does not include research grants or special teaching grants obtained from outside agencies. Neither does it include any significant portion of the cost of operating

the teaching hospitals either owned or affiliated with medical schools. However, \$3,016,894 of the total represents expenditures for the operation of certain activities in teaching hospitals such as salaries of professional and technical personnel and special laboratory, clinic, or dispensary programs.

On the basis of data available it is not possible to determine accurately the substantial financial contribution that a number of teaching hospitals render to the educational programs of their affiliated medical schools. Furthermore, it is not possible to estimate the value of instructional services contributed by large numbers of volunteer, unpaid members of the teaching faculties of medical schools.

Thirty-eight schools report 1954-1955 budgets of over a million dollars, three being over 3 million and eight others over 2 million dollars. Six of the four year schools report budgets of less than \$500,000 with one such school having a budget of less than \$400,000.

Estimated tuition fees for 1954-1955 will approximate \$18,182,000, or 19.5% of the budget. This represents a relative decrease of income in proportion to the total budget as last year tuition accounted for 20.6% and in 1952-1953 for 21.5% of the anticipated income. As is well known, tuition fees vary widely from a very low level in some of the state schools, in which they represent an almost insignificant part of the available budget funds, to the position of representing three-quarters of the anticipated budget in one of the private institutions. There are six medical schools in which anticipated tuition income accounts for over one-half of the total projected budget.

Without exception all of the 80 medical schools have listed research grants from outside agencies in their 1954-1955 budgets. These are estimated to vary from \$11,000 in one institution to over \$2,500,000 in one of the most active research institutions. Thirteen schools anticipate such funds in excess of a million dollars and 18 others in excess of \$500,000. The total amount anticipated from research grants from outside agencies to medical schools in 1954-1955 is \$43,383,666. Since past experience has indicated that the anticipated total is usually substantially less than the amount received before the end of the year it is probable that the final figure will exceed the amount indicated above.

The anticipated 1954-1955 budgets also indicate that all medical schools will receive teaching grants from outside sources varying from a low of \$10,000 to a high of \$246,405. The total amount listed in this category represents \$6,874,411. Again, it is probable that this total will be augmented during the course of the year. In addition to regularly budgeted funds, research and teaching grants from outside sources a number of institutions report funds for major expenses in the development of miscellaneous projects not otherwise included that total \$4,978,812. Table 3 is a recapitulation of the estimated funds available to medical schools for 1954-1955. As indicated previously this table does not include funds for construction or operation of major clinical facilities.

Comparison of the total of \$148,645,201 estimate of funds available to medical schools for 1954-1955 with the estimate for 1953-1954 indicates an augmentation of

\$16,336,201. As has been indicated in previous annual reports, it is important to understand that the total of \$148,645,201 shown in the table will support a wide spectrum of research and service as well as undergraduate medical education. All schools of medicine today carry responsibilities for the teaching of other students in addition to medical students. Furthermore, the constant search for new knowledge emanating from active research is a well-established function and an essential part of the activity of a modern medical school.

In spite of augmented funds available to medical schools, these institutions continue to face difficult and perplexing problems. Faculty salaries in many instances have not kept pace with higher costs of living. This has perhaps been more of a problem in the basic medical science fields than in some of the clinical areas, though some schools indicate that their clinical staff personnel in certain categories are seriously underpaid. Undoubtedly, this has played a role in the increasing difficulty in recruitment of able young faculty, particularly in the basic medical sciences. However, it is true that recent developments in the clinical fields have attracted more and more young scientists into the applied aspect of basic medical sciences. This has created a new competitive factor in recruitment from the standpoint of the basic medical science departments themselves. In some institutions this poses an increasingly difficult problem and should be given serious consideration. It is possible that improved interdepartmental cooperation among basic medical sciences and certain clinical fields might materially strengthen both areas and reduce the currently existing competition for highly qualified basic medical science personnel, thereby enhancing recruitment of such persons in the basic medical science departments.

As has been indicated in the section on major developments in medical schools, it is estimated that about \$110,013,846 is budgeted for capital expenditures at the present time for construction and equipment of basic medical science, hospital and clinic, dormitory, and other facilities. During the past year projects of this nature totalling \$64,115,574 were completed. In their overall estimates of needs, medical schools indicate that large sums are still needed for construction of new buildings, remodeling and modernization of existing facilities, and the purchase and installment of new permanent equipment. There has been marked and steady improvement toward the solution of these problems during recent years, however, the adequate maintenance of currently existing and newly developing medical schools, together with the constant demand for the application of new knowledge and techniques in the interest of ever better medical care for the American public, implies a continuing need for augmented financing of medical education and research.

NATIONAL FUND FOR MEDICAL EDUCATION AND AMERICAN MEDICAL EDUCATION FOUNDATION

The American Medical Education Foundation, which was established by the American Medical Association to seek contributions from the medical profession, and the National Fund for Medical Education, which was or-

ganized to seek contributions from business, industry, and other segments of our society, continued to make steady progress during the past year in raising unrestricted funds on a national basis to assist schools in securing more adequate financial support.

On July 19, 1954, the National Fund for Medical Education disbursed \$2,176,904.71, collected through the combined efforts of the two organizations, to the 74 four-year and 6 basic medical science schools. American medicine should take pride in the fact that \$1,087,375.60 of this sum was contributed from the profession. Individ-

TABLE 4—Number of New and Old Authorized and Budgeted Full-Time Positions by Departments in the Medical and Basic Science Schools of the United States, 1954-1955

	New	Old	Total
Basic Science Departments			
Anatomy	4	21	25
Biochemistry	4	4	8
Physical chemistry		1	1
Physiology	9	7	16
Pharmacology	5	11	16
Microbiology	6	8	14
Pathology	6	21	27
Totals	34	73	107
Clinical Departments			
Internal medicine	13	10	23
Neurology	2	3	5
Dermatology and syphilology	1	1	2
Neurology and psychiatry	15	15	30
Surgery	6	13	19
Ophthalmology		4	4
Otolaryngology	2		2
Pediatrics	6	9	15
Obstetrics and gynecology	4	10	14
Radiology	1	10	11
Anesthesiology	4	1	5
Physical medicine		4	4
Preventive medicine	8	9	17
Totals	62	89	151
Analysis of Faculty Rank of Vacancies			
Basic Science Departments			
Full professors	4	10	14
Associate professors	5	22	27
Assistant professors	16	23	39
Instructors	9	19	28
Totals	34	73	107
Clinical Departments			
Full professors	12	19	31
Associate professors	6	15	21
Assistant professors	26	28	54
Instructors	19	27	46
Totals	62	89	151
Grand Totals	96	163	259

ual contributors to the American Medical Education Foundation have increased from slightly over 3,000 in 1951 to 18,176 during the past year, which is indicative of the tremendous potential of support from the medical profession itself as more and more physicians join in helping to meet this challenge.

Over \$6,826,900 has been disbursed by these two organizations to assist medical schools since the first grants were made in July, 1951. Both organizations continue to intensify their activities with the hope that through their combined efforts they may eventually be able to provide the medical schools of the nation with funds approximating 10 million dollars annually to aid in meeting the operational costs of their educational programs.

MEDICAL SCHOOL FACULTIES

Medical schools in the United States reported 34 new and 73 old, for a total of 107, authorized and budgeted full-time positions currently unfilled in their basic medical science faculties. In the clinical departments there are 62 new and 89 old, for a total of 151, authorized and budgeted full-time vacancies. The over-all total (table 4) lists 258 vacancies in new and old budgeted full-time faculty positions. Analysis indicates that 45 of these vacancies are professorships, 48 associate professor-

TABLE 5—Analysis of Status of Faculty Personnel in Clinical Departments

Status	All Medical Schools United States	All Medical Schools Canada
Absolute full time salary (no other allowances)	2 153	25
Geographic full time (basic salary plus income from consultations etc)	2 078	32
Part time salary (practice income unlimited)	2,576	493
Volunteer status (no stipend)	21,323	620
Totals	28 435	1,175

ships, 91 assistant professorships, and 74 instructorships. The total represents 25 vacancies less than were reported the previous year.

In view of the marked differences existing in medical schools in regard to absolute full-time, geographic full-time, part-time, and volunteer arrangements of faculty personnel in clinical departments, each institution was requested to furnish information in regard to the employment arrangements for clinical personnel. Inquiry was made as to how many faculty members of the clinical departments are employed under the following arrangements: (1) absolute full-time salary, no other allowances, (2) geographic full-time, basic salary plus income from consultation, etc., (3) part-time salary, practice income unlimited, and (4) volunteer status, no stipend.

Table 5 is an analysis of the status of faculty personnel in clinical departments prepared from the material submitted by the medical colleges in answer to the inquiry. Twelve of the 74 four year medical schools and 3 of the 6 basic medical science schools in the United States indicated no clinical teachers were employed on an absolute full-time basis. The other 65 medical schools reported absolute full-time clinical teachers varying in number from 2 to 253. Nine four year medical schools and four basic medical science schools reported no clinical teachers employed on a geographic full-time basis, while the remaining 67 reported numbers varying from 1 to 190. Three four year medical schools and one basic medical science school reported no part-time clinical teachers. Only three of the four year schools and two of the basic science schools listed no volunteer faculty.

All but 15 of the 80 medical schools in the United States now have a nucleus of absolute full-time or geographic full-time faculty or clinical teachers, under both such arrangements, who are concerned with administration, curriculum planning, teaching, and research. Part-time and volunteer faculty members constitute by far the largest single group of teachers in the clinical fields, their duties varying from a few hours annually to large areas of responsibility. Comparative data are given in the table for the Canadian medical schools.

SCHEDULED CLOCK HOURS OF INSTRUCTION
BY LECTURE

During recent years there has been a marked decrease in the amount of time devoted to the didactic lecture method of instruction in medical schools and a similarly marked increase in other methods of instruction designed to engage the active participation of the student. As now utilized by leaders in medical education, the lecture, where retained, is not an oral diarrheal repetition of the printed page but is designed to highlight advances, indicate differences of opinion and their possible resolution, and to correlate material with texts and other current literature. Small group and conference teaching has assumed a role of greater importance in general, and almost individual teacher-student relationships have become possible in many phases of instruction in the clinical fields. Such methods entail active and stimulating participation of the student in his own self-education and confront instructors with constant challenges. In many schools it is becoming the junior-colleague-senior-colleague relationship between student and teacher rather than the formal student-professor relationship that constituted the traditional approach in most institutions within recent memory and still permeates some. As far as both teachers and students are concerned, constant preparation for the challenge of active conference participation represents something live and dynamic and is conducive to maximum teaching and learning experiences.

In view of these trends, an effort was made to analyze the actual clock hours of scheduled lectures in each of the four years of the medical curriculum according to current schedules. Forty of the medical schools submitted data that have made possible the following evaluation (table 6). The remaining medical schools did not submit an approximation of scheduled lecture hours but submitted their total scheduled hours, which would include all other assignments as well as lectures. In the first year, scheduled lecture hours varied from a maximum of 605 to a minimum of 162, with an average of 366 and a median of 368. During the second year, scheduled lectures varied from a maximum of 672 to a minimum of 157, with an average of 466 and a median of 479. Thirty-four schools reported third year scheduled lectures from

TABLE 6—Scheduled Clock Hours of Instruction by Lecture

	Year of Instruction			
	First	Second	Third	Fourth
Number of schools	40	40	34	25
Maximum	605	672	600	584
Minimum	162	157		
Average	366	466	333	138
Median	368	479	300	125

a maximum of 660 to a minimum of zero, with an average of 333 and a median of 300. Thirty-five institutions indicated a maximum of 384, a minimum of zero, with an average of 138 and a median of 125 scheduled lecture hours in the fourth year. This statistical data should be of interest to all institutions engaged in curriculum study and planning from the standpoint of trends. It also indicates the greater utilization of conference, group and individual student-teacher methods that are currently so effective in many schools.

Students in Medical Schools

ENROLLMENTS

As has been true for the past five years, again this year the total number of students enrolled in approved medical schools in the United States established a new record. Enrollment data for this year are shown in table 1. Comparative data for previous years are given in table 7. In utilizing these data it should be noted that there are certain discrepancies in figures prior to 1942-1943 due to difficulty on the part of a few schools to classify stu-

TABLE 7—*Schools, Students, and Graduates in the Medical and Basic Science Schools in the United States, 1931-1954*

(Students in required intern year not included)

Year	Schools	Freshman	Sophomore	Junior	Senior	Total	Graduates
1930-1931	76	6,446	5,535	5,080	4,918	21,952	4,735
1931-1932	76	6,260	5,462	4,932	4,885	21,535	4,930
1932-1933	77	6,426	5,479	5,017	4,919	21,846	4,894
1933-1934	77	6,157	5,071	4,918	4,937	21,090	5,035
1934-1935	77	6,307	5,612	5,142	4,901	21,958	5,101
1935-1936	77	6,603	5,458	5,230	5,020	22,303	5,163
1936-1937	77	6,910	5,269	5,140	5,108	22,425	5,377
1937-1938	77	5,791	5,221	4,900	5,036	21,057	5,104
1938-1939	77	5,764	5,160	4,947	4,921	21,002	5,089
1939-1940	77	5,794	5,177	4,921	4,891	21,077	5,097
1940-1941	77	5,837	5,204	4,909	4,819	21,077	5,275
1941-1942	77	6,218	5,406	5,087	4,912	21,623	5,163
1942-1943	76	6,421	5,828	5,278	5,100	22,623	5,223
1943-1944	77	6,561	6,071	5,610	5,217	23,459	5,134
1944 (2d session)	77	6,648	6,140	6,081	5,791	24,660	5,169
1944-1945	77	6,023	5,970	5,700	5,830	23,523	5,136
1945-1946	77	6,060	5,700	5,751	5,611	23,122	5,826
1946-1947	77	6,064	5,675	5,707	5,991	23,437	6,359
1947-1948	77	6,487	5,708	5,104	5,340	22,739	5,043
1948-1949	78	6,688	6,191	5,702	5,086	23,667	5,091
1949-1950	79	7,012	6,344	6,079	5,688	25,123	5,003
1950-1951	79	7,177	6,690	6,263	6,000	26,130	6,135
1951-1952	79	7,436	6,816	6,677	6,190	27,119	6,080
1952-1953	79	7,420	7,063	6,720	6,475	27,678	6,668
1953-1954	80	7,449	7,068	6,983	6,727	28,227	6,801

dents in conventional classes. The total enrollment figure for approved four year schools and schools of basic medical sciences was 2% higher than last year. Slightly less than half of this increase was due to the addition of the University of Puerto Rico School of Medicine to the list of approved schools and to the approval of the University of North Carolina School of Medicine as a four year school. The latter was listed previously as an approved school of basic medical sciences, and its change of status adds its junior and senior classes to total enrollment figures. It can be anticipated that total enrollment should continue to rise as the new schools and planned expansions in the schools of basic medical sciences reach the point of complete operation necessary for Council approval.

Enrollments in the entering class were the highest yet recorded. The increase over the previous year was due in its entirety to the addition of the University of Puerto Rico, which more than compensated for a slight decrease in freshmen enrollment in the schools as listed in the previous year. It seems likely that new facilities will further increase the size of future freshman classes.

The University of Tennessee and the University of Michigan each admitted to their entering classes more than 200 students (219 and 204 respectively). There were

an additional six schools that admitted 150 or more freshmen students. Six four year schools admitted less than 55 freshmen. The median number of students for the first year classes in the four year schools was 86, and the average was 98. The average for schools of basic medical sciences was 38. In addition to the regularly enrolled full-time students discussed above, medical schools in the United States had 133 part-time and special students enrolled who were working toward the MD degree.

Enrollment data for approved medical schools in Canada is given in table 2. Total enrollment in Canada has increased since last year by 187, or 5.3%. However, the University of British Columbia School of Medicine was added to the list of approved schools during the year covered by this report. Its total enrollment of 233 more than compensated for the small decrease in total enrollment of the schools previously listed. Enrollment in the entering class was increased 7% as compared to the preceding year. Most but not all of this increase was due to the inclusion of the University of British Columbia. Canadian schools had an additional 474 students enrolled in premedical years and 391 students enrolled in a required intern year. These figures are not included in the total given in table 2.

ENROLLMENT OF VETERANS

A substantial decline in the total number of both men and women veterans enrolled in medical schools in the United States again occurred. There were 35% fewer veterans in the medical schools in 1953-1954 than in 1952-1953 despite an increase in over-all enrollment.

Enrollment figures for veterans are given in table 8. Veterans comprised 11.6% (152 last year) of the freshman class, 12.9% (21) of the sophomore class, 18.8% (34.6) of the junior class, and 30.4% (46.6) of the senior class. It is interesting to note that the greatest decreases occurred in the two upper classes, and that there was a tendency toward leveling off in the two lower classes. Perhaps the higher figures for the upper classes

TABLE 8—*Enrollment by Classes of Veterans and Nonveterans in the Medical and Basic Science Schools in the United States, 1953-1954*

Class	Men			Women			Total, Men and Women
	Veterans	Other	Total	Veterans	Other	Total	
Freshmen	863	6,100	7,023	3	423	426	7,449
Sophomores	911	5,782	6,693	4	371	375	7,068
Juniors	1,800	5,332	6,637	6	340	346	6,983
Seniors	2,040	4,332	6,372	6	349	355	6,727
Totals	5,119	21,606	26,725	19	1,483	1,502	28,227

represent a carry over from World War II, and the lower figures for the first and second year classes reflects mostly veterans from the Korean war.

ENROLLMENT OF WOMEN STUDENTS

There have been no significant changes in enrollment of women since the 1952-1953 report. Information on the numbers, by school, of male and female students enrolled and graduated is given in table 9. Jefferson and Dartmouth continue to have no women students, and Woman's Medical College has no men enrolled.

TABLE 9—Distribution of Students and Graduates in the United States and Canada by Sex 1953-1954

	Students		Graduates	
	Men	Women	Men	Women
United States				
Medical College of Alabama	23	12	59	2
University of Arkansas	296	22	68	4
College of Medical Evangelists	345	20	89	3
University of Southern California	259	14	135	6
Stanford University	220	17	57	7
University of California	257	22	66	8
University of Colorado	279	26	75	6
Yale University	225	17	60	3
Georgetown University	429	26	102	5
George Washington University	339	11	77	1
Howard University	265	34	69	10
Emory University	278	7	70	
Medical College of Georgia	289	10	70	3
Chicago Medical School	274	6	194	3
Northwestern University	508	25	129	7
Stritch School of Medicine	825	11	82	1
University of Chicago	261	19	62	7
University of Illinois	685	82	101	8
Indiana University	558	17	135	4
State University of Iowa	449	9	114	2
University of Kansas	448	13	101	4
University of Louisville	302	19	67	5
Louisiana State University	420	28	102	5
Tulane University	273	13	124	4
Johns Hopkins University	272	22	71	6
University of Maryland	384	20	90	6
Boston University	272	16	62	4
Harvard Medical School	494	37	138	10
Tufts College Medical School	432	17	105	7
University of Michigan	692	36	148	7
Wayne University	271	6	63	2
University of Minnesota	464	26	122	11
University of Mississippi	111	2		
St. Louis University	487	4	132	
University of Missouri	82	3		
Washington University	353	13	93	3
Crelghton University	293	7	70	2
University of Nebraska	333	11	90	2
Dartmouth Medical School	46			
Albany Medical College	204	8	51	2
University of Buffalo	263	16	66	4
Columbia University	417	45	100	11
Cornell University	320	17	79	4
New York Medical College	453	25	104	8
New York University	495	35	116	5
State University of New York New York City	537	36	122	9
State University of New York Syracuse	274	11	65	1
University of Rochester	266	14	65	4
Duke University	301	10	77	3
University of North Carolina	221	5	46	2
Bowman Gray School of Medicine	192	8	60	
University of North Dakota	68	2		
Ohio State University	657	18	181	5
University of Cincinnati	347	5	89	
Western Reserve University	306	29	74	11
University of Oklahoma	370	10	77	4
University of Oregon	256	11	63	3
Hahnemann Medical College	376	17	94	5
Jefferson Medical College	666		163	
Temple University	491	25	127	5
University of Pennsylvania	478	24	123	4
University of Pittsburgh	370	11	95	3
Woman's Medical College of Pennsylvania		181		43
Medical College of South Carolina	255	10	63	2
University of South Dakota	62	1		
McHerry Medical College	246	11	65	5
University of Tennessee	710	35	162	7
Vanderbilt University	197	9	63	1
Baylor University	341	17	82	4
Southwestern Medical College	367	27	95	3
University of Texas	567	82	125	7
University of Utah	193	5	44	1
University of Vermont	160	9	39	4
Medical College of Virginia	343	29	91	9
University of Virginia	288	4	70	
University of Washington	274	18	65	3
West Virginia University	57	4		
Marquette University	378	13	93	2
University of Wisconsin	294	24	75	4
University of Puerto Rico	151	33	87	8
Totals	26,725	1,592	6,501	390
Canada				
University of Alberta	222	14	55	6
University of British Columbia	216	17	52	2
University of Manitoba	255	12	52	6
Dalhousie University	203	9	48	5
Queen's University	334	25	47	6
University of Ottawa	237	11	45	2
University of Toronto	255	8	150	16
University of Western Ontario	225	15	65	3
Laval University	573	29	133	1
McGill University	415	25	106	4
University of Montreal	333	20	99	9
University of Saskatchewan	59	6		
Totals	3,534	276	1,050	69
Grand Totals	30,259	1,868	7,551	459
Number of Premedical Students Excluded				
Men	60	4		
Women	42	2		
Number of Fifth Year Student Excluded				
Men	220			
Women	115			

The total number of women students and graduates and the percentage of women to total students and to total graduates is given for each year since 1905 in table 10. Figures for the years 1905 through 1929 include data for all schools (class A, B, and C), those since 1929 include data only for approved schools. Except for the years immediately following World War II, the percentage of women studying medicine and women graduates has remained quite stable.

TABLE 10—Women in Medicine in the United States

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,073	4.1	219	4.0
1910	1,507	4.0	116	2.6
1915	592	4.0	92	2.6
1920	818	3.8	122	4.0
1925	910	5.0	204	5.1
1926	935	5.0	212	5.4
1927	964	4.9	189	4.7
1928	929	4.5	207	4.9
1929	925	4.4	214	4.8
1930	955	4.4	204	4.5
1931	995	4.5	217	4.6
1932	935	4.3	208	4.2
1933	1,006	4.7	214	4.4
1934	1,020	4.5	211	4.2
1935	1,077	4.7	207	4.1
1936	1,133	5.0	246	4.7
1937	1,113	5.1	237	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	269	5.1
1940	1,145	5.4	253	5.0
1941	1,146	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,159	5.1	241	4.6
1944	1,176	5.0	223	4.7
1944 (2d session)	1,141	4.6	252	4.9
1945	1,352	5.6	262	5.1
1946	1,363	8.0	242	4.2
1947	2,153	9.1	342	6.4
1948	2,159	9.5	322	7.1
1949	2,109	8.9	612	12.1
1950	1,596	7.2	585	9.7
1951	1,564	5.9	498	7.6
1952	1,471	5.4	351	5.7
1953	1,463	5.3	363	5.5
1954	1,592	5.3	369	5.2

* Includes additional classes

ATTRITION OF MEDICAL STUDENTS

Medical school reports on student losses for the academic year just ended do not reach this Council in sufficient time for inclusion in the current report on medical education. Therefore, all data referred to in this section deal with the academic year 1952-1953. During the year referred to, there was a total of 606 medical students in the 79 medical schools in the United States lost to medicine. This figure includes losses due to academic failures

TABLE 11—Medical Student Attrition in the Eighty Approved United States Medical Schools 1952-1953

Class	Enrollment	Failed	Withdrew Poor Stand	Withdrew Good Stand	Total	Percent of Enrollment
Freshmen	7,425	234	15	130	379	5.1
Sophomores	7,093	70	16	11	167	2.4
Juniors	6,755	27	2	49	78	1.2
Seniors	6,455	2	2	0	4	0.1
Total	27,728	333	35	190	658	2.4

and withdrawals for other causes. It does not include students who withdrew from one school and successfully transferred to another, since such withdrawals do not represent a loss to medicine. Table 11 depicts by class and cause this attrition.

Almost two-thirds of the students lost were in the first year class, representing about 5% of the total number enrolled in that class. Only 2% of the students lost were in the senior class, representing 0.2% of the total enrollment.

TABLE 12—Residence of Freshman Medical

Marginal Number	School	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		Alabama	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Dist. of Columbia	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
1	Medical College of Alabama																	
2	University of Arkansas																	
3	College of Medical Evangelists																	
4	University of Southern California School of Medicine																	
5	Stanford University School of Medicine																	
6	University of California School of Medicine																	
7	University of Colorado School of Medicine																	
8	Yale University School of Medicine																	
9	Georgetown University School of Medicine																	
10	George Washington University School of Medicine																	
11	Howard University College of Medicine																	
12	Emory University School of Medicine																	
13	Medical College of Georgia																	
14	Chicago Medical School																	
15	Northwestern University Medical School																	
16	Stritch School of Medicine of Loyola University																	
17	University of Chicago the School of Medicine																	
18	University of Illinois College of Medicine																	
19	Indiana University School of Medicine																	
20	State University of Iowa College of Medicine																	
21	University of Kansas School of Medicine																	
22	University of Louisville School of Medicine																	
23	Louisiana State University School of Medicine																	
24	Tulane University of Louisiana School of Medicine																	
25	Johns Hopkins University School of Medicine																	
26	University of Maryland School of Medicine																	
27	Boston University School of Medicine																	
28	Harvard Medical School																	
29	Tufts College Medical School																	
30	University of Michigan Medical School																	
31	Wayne University College of Medicine																	
32	University of Minnesota Medical School																	
33	University of Mississippi School of Medicine																	
34	University of Missouri School of Medicine																	
35	St. Louis University School of Medicine																	
36	Washington University School of Medicine																	
37	Cleveland University School of Medicine																	
38	University of Nebraska College of Medicine																	
39	Dartmouth Medical School																	
40	Albany Medical College																	
41	University of Buffalo School of Medicine																	
42	Columbia University College of Physicians and Surgeons																	
43	Cornell University Medical College																	
44	New York Medical College Flower and Fifth Avenue Hospitals																	
45	New York University College of Medicine																	
46	State University of New York College of Medicine, New York City																	
47	State University of New York College of Medicine, Syracuse																	
48	University of Rochester School of Medicine and Dentistry																	
49	University of North Carolina School of Medicine																	
50	Duke University School of Medicine																	
51	Bowman Gray School of Medicine of Wake Forest College																	
52	University of North Dakota School of Medicine																	
53	University of Cincinnati College of Medicine																	
54	Western Reserve University School of Medicine																	
55	Ohio State University College of Medicine																	
56	University of Oklahoma School of Medicine																	
57	University of Oregon Medical School																	
58	Hahnemann Medical College and Hospital of Philadelphia																	
59	Jefferson Medical College of Philadelphia																	
60	Temple University School of Medicine																	
61	University of Pennsylvania School of Medicine																	
62	Woman's Medical College of Pennsylvania																	
63	University of Pittsburgh School of Medicine																	
64	Medical College of South Carolina																	
65	University of South Dakota School of Medicine																	
66	University of Tennessee College of Medicine																	
67	Meharry Medical College																	
68	Vanderbilt University School of Medicine																	
69	Southwestern Medical School of the University of Texas																	
70	University of Texas School of Medicine																	
71	Baylor University College of Medicine																	
72	University of Utah School of Medicine																	
73	University of Vermont College of Medicine																	
74	University of Virginia Department of Medicine																	
75	Medical College of Virginia																	
76	University of Washington School of Medicine																	
77	West Virginia University School of Medicine																	
78	University of Wisconsin Medical School																	
79	Marquette University School of Medicine																	
80	University of Puerto Rico School of Medicine																	
Totals		117	86	120	90	62	101	10	44	127	130	31	377	172	124	111	113	157
81	University of Alberta Faculty of Medicine																	
82	University of British Columbia School of Medicine																	
83	University of Manitoba Faculty of Medicine																	
84	Dalhousie University Faculty of Medicine																	
85	Queen's University Faculty of Medicine																	
86	University of Ottawa Faculty of Medicine																	
87	University of Western Ontario Faculty of Medicine																	
88	University of Toronto Faculty of Medicine																	
89	McGill University Faculty of Medicine																	
90	University of Montreal Faculty of Medicine																	
91	Laval University Faculty of Medicine																	
92	University of Saskatchewan College of Medicine																	
Totals		0	0	0	0	0	2	1	0	0	1	0	3	0	0	0	0	0
Grand Totals		117	86	120	90	62	103	11	44	127	131	31	380	172	124	111	113	157
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

* Figures include two freshman classes

† Figures are for students in beginning premedical year

Students in the United States and Canada 1953-1954

[illegible]

ment in that class. Attrition due to academic failure (55.5%) and withdrawals in poor academic standing (5.5%) for all classes combined account for approximately two-thirds of all losses. The remaining one-third were losses due to withdrawal of students in good standing.

It is perhaps of some importance to note that the lowest relative incidence of withdrawals in good academic standing was in the freshman class, in the upper three classes almost half of all losses were in this category. It is unfortunate that detailed information in regard to this group is not available, for many of these students apparently had sufficient intellectual ability for the study of medicine. It seems possible that some of the losses in this category might have been prevented had it been possible to offer additional financial assistance, guidance, and counseling.

There were no failures in the freshman classes of 25 schools, including five two-year schools. There were less than 5% first year failures in 35 schools, including one two-year school, between 5 to 10% such failures in 13 schools, and more than 10% in six schools, including one two-year school. As compared to the over-all freshman failure rate of 5.1%, the highest rate reported by any individual school was 17%. The percentage of failure for classes other than the first year class was not significantly different in those schools reporting no freshman failures than in all other schools. Neither was there any significant difference found in withdrawal rates.

Fourteen medical schools, 13 state supported and 1 city supported, admitted to their freshman classes in 1952-1953 only residents of the state in which the school is located. The failure rate for freshmen in these schools was essentially double (5.5%) that for all other schools (2.8%). Computations made from material presented by Stalnaker⁸ indicate that these 14 schools had in the year under consideration 2.7 applications for each position available as compared to 8.6 applications for each position available in all other schools. Three of these 14 schools were schools of basic medical sciences. Two of the three were the only schools in their respective states, so that their students upon completion of the two year course of study were in the position of having to seek advanced standing in a medical school in another state even though their own institution accepted no students from other states.

During the year 1952-1953, there were 101 freshmen who had originally enrolled in another year but were listed for this year as repeaters. These were distributed in 33 schools, 89 repeating as a result of scholastic difficulty and the remainder because of illness. In any of the institutions concerned where there is a fixed number of positions available in the entering class, freshman students repeating the year can represent a loss to medicine. Although the alternatives are such as to make such losses inevitable, any calculation of total losses to medicine would have to take this group into consideration.

As opposed to the attrition rate in the entering class of 1952-1953 of 5.1%, the attrition rate for freshmen

15 years ago was 9.4%, 20 years ago 14.1%, and 25 years ago 14.4%. It is not possible to ascribe this significant change to any specific cause with complete certainty. However, it surely is not unreasonable to presume that it must be due in part to improved selection methods and greatly intensified efforts in the area of student guidance and counseling.

GEOGRAPHIC SOURCE OF FRESHMAN STUDENTS AND THE RELATIONSHIP OF PRIVATE AND GOVERNMENT-OWNED MEDICAL SCHOOLS

The "state of residence" can be interpreted in many ways under different circumstances. Since, at times, it may be to the advantage of a medical student to claim as his place of residence the state in which the medical school he is enrolled in is located, it is impossible to declare that the material presented in this section is in fact based on the legally permanent residence of medical students. The data were derived from the enrollment information submitted by the medical schools, and the only claim that can be made is that designated places of residence were apparently acceptable to the schools themselves.

It also seems advisable to again remind the reader that figures relative to enrollment of students include data from only those schools listed, all of whom are fully approved by the Council on Medical Education and Hospitals. Figures from schools that do not as yet have complete programs in effect are not included, since such institutions are not eligible for Council approval. Figures for students enrolled in approved schools who were dropped or withdrew during the academic year are included, but figures for students who were accepted for enrollment but who withdrew before actual enrollment are not included. Reference has been made in previous sections of this report, and will be made again in this section, to Stalnaker's report, "The Study of Applicants."⁹

Apparent discrepancies between enrollment and geographic source of students in that study and this report are accounted for by the qualifications given above.

Table 12 presents the residence of students at the time of their enrollment in the 1953-1954 entering classes in all approved medical schools in the United States and Canada. Study of this table reveals that 41% of all first year students in the United States came from six states (New York, Pennsylvania, Ohio, Texas, Illinois and California). According to "The Study of Applicants,"⁹ prepared by the Association of American Medical Colleges, 43% of all applicants came from these same six states.

There were fewer than 25 freshman students from each of seven states (Delaware, Maine, Nevada, New Hampshire, New Mexico, Vermont, and Wyoming) and a total of 95 students, representing 1.3% of the total first year class enrollment from these states. Stalnaker's study indicates that 1.4% of all applicants came from these seven states.

Table 13 lists states in ascending order according to the number of enrolled first year medical students per 100,000 population. It can be seen that the six states heavily represented by freshman students are well scattered throughout this list, with half of them having fewer first year medical students than the median (4.5 per

⁸ Stalnaker, J. M. "The Study of Applicants, 1952-1953," J. M. Educ. 28: 21-28 (Feb.) 1953.

⁹ Stalnaker, J. M. "The Study of Applicants, 1953-1954," J. M. Educ. 29: 13-20 (April) 1954.

100,000) and half having more. However, the seven states whose residents are poorly represented in the first year classes of approved medical schools have, with one exception, fewer freshman medical students enrolled than the median, and five out of the seven occupy the first five positions as states with the fewest number of students per 100,000 population. It is interesting and possibly significant to note that within the six heavily represented states are located 29 (36%) of the 80 approved schools. In the seven states poorly represented only one four year medical school is located.

In 15 approved medical schools, enrollment of first year students was restricted to residents of the state in which the school is located. Fourteen of these are state-supported schools and the other is municipally supported. From information contained in Stalnaker's study, it can be shown that there were 2.5 applications per available position in these schools as compared to 7.4 applications per position in all other schools. In another section of

TABLE 13—Ratio of Freshman Students to State Population, 1953-1954

Numbers of students per 100,000 population * in the medical and basic science schools of the United States			
New Mexico	1.7	Connecticut	4.6
New Hampshire	2.3	South Carolina	4.6
Maine	2.5	Wisconsin	4.6
Nevada	2.0	Ohio	4.7
Delaware	2.8	South Dakota	4.7
California	2.9	Iowa	4.8
Missouri	3.1	Minnesota	4.8
Rhode Island	3.2	Tennessee	4.9
Georgia	3.6	Oregon	5.0
North Carolina	3.6	Oklahoma	5.1
West Virginia	3.6	District of Columbia	5.2
Alabama	3.8	Idaho	5.2
Florida	3.9	Mississippi	5.2
Kentucky	3.9	New Jersey	5.2
Massachusetts	3.9	Pennsylvania	5.2
Arizona	4.0	Kansas	5.2
Illinois	4.1	Colorado	5.6
Indiana	4.1	Louisiana	5.6
Maryland	4.1	New York	6.4
Wyoming	4.1	Vermont	6.4
Michigan	4.2	Arkansas	6.5
Washington	4.2	North Dakota	6.5
Virginia	4.3	Utah	7.7
Montana	4.4	Nebraska	7.9
Texas	4.5	United States	4.7

* Population Estimates Current Population Reports Jan 25 1954, Series P 2, No 89 Washington D C
† State with no medical school

this report (attrition of medical students) similar data are given for the 1952-1953 entering class, and it is to be noted that the failure rate among 1952-1953 freshman students in these schools with complete restriction of enrollment to in-state residents was almost double that for first year students in all other schools. As was true for the 1952-1953 class, three schools of the basic medical sciences limited enrollment completely to state residents. Two of these three schools are the only medical schools located in their respective states.

In four other schools out-of-state students accounted for less than 5% of the entering class, in four schools, 5 to 10% of students were from out of state, in 34 schools, 10 to 50% of the students were from out of state, and in 22 schools 50 to 94% of students were from out of state. Information as to the number of non-resident first year students at the University of Puerto Rico School of Medicine was not available.

Of the 23 schools limiting out-of-state residents to less than 10% of the positions in the entering class all but one is a state or municipally supported institution. Of the 22 schools admitting out-of-state residents to more than 50% of the positions in the entering class all but one is

a privately supported institution. Of all students, 49.9% in the entering class were admitted to state or municipally supported institutions, and 50.1% were admitted to privately supported institutions. Of the freshmen enrolled in government supported schools, 394 or 10.6% were residents of states other than that in which the schools

TABLE 14—Medical Schools Classified by Ownership 1953-1954

Privately Owned	
1	College of Medical Evangelists
2	Stanford University School of Medicine
3	University of Southern California School of Medicine
4	Yale University School of Medicine
5	Georgetown University School of Medicine
6	George Washington University School of Medicine
7	Howard University College of Medicine
8	Emory University School of Medicine
9	Chicago Medical School
10	Northwestern University Medical School
11	Stritch School of Medicine of Loyola University
12	University of Chicago the School of Medicine
13	Tulane University of Louisiana School of Medicine
14	Johns Hopkins University School of Medicine
15	Boston University School of Medicine
16	Harvard Medical School
17	Tufts College Medical School
18	St. Louis University School of Medicine
19	Washington University School of Medicine
20	Crelgton University School of Medicine
21	Dartmouth Medical School
22	Albany Medical College
23	Columbia University College of Physicians and Surgeons
24	Cornell University Medical College
25	New York Medical College Flower and Fifth Avenue Hospitals
26	New York University College of Medicine
27	University of Buffalo School of Medicine
28	University of Rochester School of Medicine and Dentistry
29	Duke University School of Medicine
30	Bowman Gray School of Medicine of Wake Forest College
31	Western Reserve University School of Medicine
32	Hahnemann Medical College and Hospital of Philadelphia
33	Jefferson Medical College of Philadelphia
34	Temple University School of Medicine
35	University of Pennsylvania School of Medicine
36	University of Pittsburgh School of Medicine
37	Woman's Medical College of Pennsylvania
38	Meharry Medical College
39	Vanderbilt University School of Medicine
40	Baylor University College of Medicine
41	Marquette University School of Medicine
State Owned	
1	Medical College of Alabama
2	University of Arkansas School of Medicine
3	University of California School of Medicine
4	University of Colorado School of Medicine
5	Medical College of Georgia
6	University of Illinois College of Medicine
7	Indiana University School of Medicine
8	State University of Iowa College of Medicine
9	University of Kansas School of Medicine
10	Louisiana State University School of Medicine
11	University of Maryland School of Medicine and College of Physicians and Surgeons
12	University of Michigan Medical School
13	University of Minnesota Medical School
14	University of Mississippi School of Medicine
15	University of Missouri School of Medicine
16	University of Nebraska College of Medicine
17	State University of New York College of Medicine at New York City
18	State University of New York College of Medicine at Syracuse
19	University of North Carolina School of Medicine
20	University of North Dakota School of Medicine
21	Ohio State University College of Medicine
22	University of Oklahoma School of Medicine
23	University of Oregon Medical School
24	Medical College of South Carolina
25	University of South Dakota School of Medicine
26	University of Tennessee College of Medicine
27	Southwestern Medical School of The University of Texas
28	University of Texas School of Medicine
29	University of Utah School of Medicine
30	University of Vermont College of Medicine
31	Medical College of Virginia
32	University of Virginia Department of Medicine
33	University of Washington School of Medicine
34	West Virginia University School of Medicine
35	University of Wisconsin Medical School
36	University of Puerto Rico School of Medicine
Municipally Owned	
1	University of Louisville School of Medicine
2	Wayne University College of Medicine
3	University of Cincinnati College of Medicine

were located. In the first year classes of the private schools 1,984 students or 53.2% of the total freshmen enrollment, were out-of-state residents.

Table 14 lists all approved United States medical schools according to type of ownership. The University of Puerto Rico School of Medicine represents an addition to the list of state-owned schools since last year.

TRANSFER OF STUDENTS FROM SCHOOLS OF BASIC MEDICAL SCIENCES TO MEDICAL SCHOOLS

All graduates of the five years between 1949 and 1953 of the six United States and one Canadian schools of basic medical sciences were successful in transferring with advanced standing to an approved four year medical school

TABLE 15 —Transfer of Students from Schools of Basic Medical Science to Medical Schools, 1949-1953

Medical School	No
Medlent College of Alabama	14
University of Arkansas	1
College of Medical Evangelists	3
University of Southern California	4
Stanford University	
University of California	5
University of Colorado	20
Yale University	
Georgetown University	
George Washington University	4
Howard University	
Emory University	7
Medical College of Georgia	
Chicago Medical School	
Northwestern University	63
Stritch School of Medicine	4
University of Chicago, The School of Medicine	
University of Illinois	28
Indiana University	6
State University of Iowa	28
University of Kansas	30
University of Louisville	26
Louisiana State University	25
Tulane University	33
Johns Hopkins University	17
University of Maryland	6
Boston University	7
Harvard Medical School	83
Tufts College Medical School	1
University of Michigan	6
Wayne University	
University of Minnesota	2
St. Louis University	11
Washington University	77
Creighton University	13
University of Nebraska	32
Albany Medical College	6
University of Buffalo	2
Columbia University	10
Cornell University	14
New York Medical College	
New York University	5
State University of New York, New York	
State University of New York, Syracuse	
University of Rochester	9
University of North Carolina	
Duke University	7
Bowman Gray School of Medicine	13
University of Cincinnati	8
Western Reserve University	9
Ohio State University	
University of Oklahoma	4
University of Oregon	1
Hahnemann Medical College	
Jefferson Medical College	13
Temple University	16
University of Pennsylvania	27
Woman's Medical College	2
University of Pittsburgh	28
Medical College of South Carolina	1
University of Tennessee	99
Meharry Medical College	1
Vanderbilt University	9
Southwestern Medical School	20
University of Texas	
Baylor University	18
University of Utah	1
University of Vermont	5
University of Virginia	8
Medical College of Virginia	109
University of Washington	7
University of Wisconsin	
Marquette University	4
University of Puerto Rico	
Total	1,018

Students completing the two year program in United States schools of basic medical sciences were accepted by 57 of the 74 approved four year schools in the United States and one of the approved Canadian schools Four

schools in the United States accepted students from all 6 of the currently existing schools of basic medical sciences, and 10 others accepted students from at least 4 of them Of the 17 schools in the United States not accepting any such students during this period, 8 are privately supported and 9 are state or municipally supported

Table 15 indicates the number of such students accepted by each of the approved four year schools in the United States This study was prepared with the thought that it would be of value to both students of the schools of basic medical sciences and their faculty advisors

All students completing the program of the University of Saskatchewan school of basic medical sciences during this period were accepted by 7 of the 11 approved four year Canadian schools

PREPROFESSIONAL REQUIREMENTS AND ATTAINMENTS OF THE ENTERING CLASS

Preprofessional Requirements—In order to provide an opportunity for students to gain a broad educational background, the Council on Medical Education and Hospitals recommends four years of preprofessional college training Since January, 1953, the minimum requirement for admission to an approved medical school has been three years of college work with the provision that rarely and only under exceptional circumstances will an approved medical school be justified in admitting a superior student with only two years of college preparatory work That this provision needs careful interpretation is illustrated by the fact that out of a total of 40 students with only two years of college study admitted to the first year class in the academic year 1953-1954, all were admitted to two medical schools and one of these schools accepted 38 such applicants

In keeping with the desire to allow students preparing for the study of medicine the opportunity for a broad, balanced education with ample freedom to follow individual interests, the courses required for premedical study by this Council have been reduced to a minimum ¹⁰ The subcommittee on preprofessional education of the Survey of Medical Education strongly endorses this principle ² They also urge that medical schools abandon the practice of listing "recommended" courses to further facilitate achievement of this aim

Stalnaker and Eindhoven have collected data on the courses required and courses recommended by the medical schools in this country ¹¹ Required course material in all fields varies from 27 hours to 84, with a median of 42 hours More than two-thirds of the medical schools list additional "recommended" science courses A somewhat smaller number list "recommended" courses in the humanities and social sciences and less than one-third of all medical schools completely refrain from recommending courses

College Record—This represents the fourth consecutive year in which data have been reported on the scholastic records of students entering medical school As was true last year, medical schools were asked to report the average college grades of their students on the basis of a four point scale in which 4.0 represents the highest attainable grade A grade of 3.6 to 4.0 is approximately

10 Essentials of an Acceptable Medical School Council on Medical Education and Hospitals, American Medical Association Chicago Decem ber, 1951
11 Stalnaker, J M., and Eindhoven, J Admission Requirements of American Medical Colleges, Association of American Medical Colleges, Chicago, 1954

equivalent to "A," 2 6 to 3 5 to "B," and 1 6 to 2 5 to "C" Seventy-two of the 80 schools provided the data requested

Table 16 presents a comparison of the college records of the 1952-1953 first year class in medicine and the 1953-1954 first year class It is worth noting that even though the change has not been dramatic, there has been this year an increase in the number of students entering medical school with a better college record than was true last year This has occurred in spite of the decrease in the number of applicants from 16,763 to 14,678 during the same period as reported by Stalnaker ⁹

Table 17 presents the number of students in the 1953-1954 entering class who had been awarded the baccalaureate degree prior to admission to medical school Approximately 70% of this entering class were in this category If the same relative number of students in this class receive such a degree during the course of their medical studies as did the class graduating from medical school in 1952-1953, then at the time of graduation in 1956-1957 almost 90% will possess both the baccalaureate degree and the medical degree

TABLE 16—Comparison of College Record Freshman Class, 1952-1953 and 1953-1954

College Grade Average	Percentage of 1953-1954 Freshman Class	Percentage of 1952-1953 Freshman Class
3.6-4.0 (A)	21.1	18.0
2.6-3.5 (B)	68.9	67.5
1.6-2.5 (C)	10.0	14.5

THE NEXT FRESHMAN CLASS

Figures currently available suggest that the forthcoming new first year medical school class will show a slight reduction over the record size of the 1953-1954 entering class It can be anticipated, however, that in a few years other new records will be established as new schools and contemplated expansion of existing schools are completed

As of June of this year, 98% of the anticipated class had already been selected There will apparently be no significant change in the number of veteran students enrolled, which strengthens the presumption made in another section of this report that the veteran population in the early years of medical school probably represent veterans of the Korean war while those from World War II have largely disappeared from the medical student group

GRADUATES

For the second consecutive year, the number of graduates of approved medical schools in the United States established a new record The 6,861 graduates of this year represent a 2.9% increase over last year As was true last year, part of the increase was due to discontinuation of the required internship year so that two schools, University of Southern California and Chicago Medical School, graduated two classes Even taking this into account, in both years there would have been a record number of graduates The addition of the graduates of the University of Puerto Rico and University of North Carolina accounts for a significant part of the increase

TABLE 17—Freshmen and Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada July 1 1953 to June 30, 1954

	Freshmen			Graduates		
	No of Freshmen	No Holding Degrees	Percentage with Degrees	No of Graduates	No Holding Degrees	Percentage with Degrees
United States						
Medical College of Alabama	89	55	70.0	61	61	100.0
University of Arkansas	92	55	59.8	72	42	58.3
College of Medical Evangelists	95	94	98.9	92	91	97.8
University of Southern California	65	45	69.2	141	93	65.9
Stanford University	58	23	39.7	64	64	100.0
University of California	76	42	55.3	74	72	97.3
University of Colorado	82	58	70.7	81	74	91.2
Yale University	79	62	78.5	63	57	90.5
Georgetown University	129	119	92.2	107	106	99.8
George Washington University	109	74	74.0	73	67	91.6
Howard University	79	79	100.0	69	69	100.0
Emory University	72	50	69.4	70	68	97.1
Medical College of Georgia	79	62	78.5	73	70	95.9
Chicago Medical School	72	72	100.0	137	125	91.2
Northwestern University	131	82	62.6	136	116	85.3
Stritch School of Medicine	88	55	63.6	83	65	78.6
University of Chicago	72	43	59.7	69	48	69.3
University of Illinois	167	79	41.9	169	167	98.8
Indiana University	151	68	45.0	139	133	95.6
State University of Iowa	119	59	49.6	116	78	67.2
University of Kansas	111	74	66.7	105	105	100.0
University of Louisville	100	85	85.0	91	90	97.8
Louisiana State University	125	57	45.6	107	8	92.0
Tulane University	135	61	45.2	128	106	82.8
Johns Hopkins University	75	75	100.0	77	77	100.0
University of Maryland	104	65	62.4	87	80	92.0
Boston University	72	71	98.6	66	63	95.5
Harvard Medical School	115	105	91.3	148	143	96.6
Tufts College Medical School	117	111	94.9	110	108	98.2
University of Michigan	204	126	61.8	155	145	93.5
Wayne University	75	40	53.3	65	56	86.2
University of Minnesota	127	51	40.2	133	123	92.5
University of Mississippi	57	26	45.6			
St. Louis University	123	97	78.9	132	112	84.8
University of Missouri	44	31	70.5			
Washington University	86	63	73.3	95	93	97.9
Creghton University	76	38	50.0	70	48	68.6
University of Nebraska	86	51	59.3	92	61	66.3
Dartmouth Medical School	24	3	12.5			
Albany Medical College	59	58	98.3	53	51	96.2
University of Buffalo	71	49	69.0	70	53	75.7
Columbia University	129	116	90.7	111	109	98.2
Cornell University	84	80	95.2	83	83	100.0
New York Medical College	125	123	98.4	112	107	95.5
New York University	130	105	80.8	121	114	94.2
State University of New York at New York City	150	139	92.7	131	114	87.0
State University of New York at Syracuse	76	53	69.7	66	60	90.9
University of Rochester	71	69	97.2	69	64	92.8
University of North Carolina	69	26	37.7	48	47	97.9
Duke University	79	59	74.7	64	64	100.0
Bowman Gray School of Medicine	54	27	50.0	50	45	90.0
University of North Dakota	38	11	28.9			
University of Cincinnati	99	89	89.9	89	84	94.4
Western Reserve University	81	80	98.8	85	81	95.3
Ohio State University	150	129	86.0	126	125	99.2
University of Oklahoma	109	41	37.6	81	64	79.1
University of Oregon	75	24	32.0	65	65	100.0
Hahnemann Medical College	105	99	94.3	99	95	95.9
Jefferson Medical College	171	162	94.7	163	169	98.8
Temple University	131	116	88.5	132	105	79.6
University of Pennsylvania	127	129	101.6	127	124	97.6
Woman's Medical College	51	50	98.0	43	43	100.0
University of Pittsburgh	109	91	83.5	99	99	100.0
Medical College of South Carolina	89	66	74.2	85	85	100.0
University of South Dakota	31	19	61.3			
University of Tennessee	219	92	42.0	159	7	4.4
Marberry Medical College	65	69	106.2	63	69	109.2
Vanderbilt University	53	24	45.3	34	54	159.0
Southwestern Medical School	100	71	71.0	71	71	100.0
University of Texas	171	70	40.9	132	115	87.1
Baylor University	93	3	3.2	65	65	100.0
University of Utah	54	24	44.4	45	45	100.0
University of Vermont	51	45	88.2	43	43	100.0
University of Virginia	76	70	92.1	70	67	96.1
Medical College of Virginia	54	71	130.0	65	65	100.0
University of Washington	75	41	54.7	68	4	5.9
West Virginia University	82	15	18.3			
University of Wisconsin	87	33	37.9	71	70	98.9
Marquette University	101	33	32.7	67	67	100.0
University of Puerto Rico	59	49	83.0	45	45	100.0
Totals	7449	4627	62.1	6143	5725	93.2
Canada						
University of Alberta				71	71	100.0
University of British Columbia				34	47	138.2
University of Manitoba				5	14	280.0
Dalhousie University				33	21	63.6
Queen's University				17	17	100.0
University of Western Ontario				71	51	71.8
University of Toronto				17	17	100.0
McGill University				117	117	100.0
University of Montreal				154	154	100.0
Laval University				47	47	100.0
University of Ottawa				47	47	100.0
Totals				567	567	100.0

for the current year Information regarding numbers of graduates over a period of 25 years can be found in table 7

Canadian medical schools reported 896 graduates, 71 more than last year A large part of this increase was due to the inclusion of graduates of the University of British Columbia

TABLE 18 —Medical Schools Offering Preceptorship Programs, 1953-1954

University of Arkansas	University of Buffalo
College of Medical Evangelists	Duke University
University of California	University of Oklahoma
Emory University	University of Oregon
Indiana University	Hahnemann Medical College
State University of Iowa	University of Pennsylvania
University of Kansas	University of South Dakota
University of Louisville	University of Texas
Boston University	University of Vermont
University of Nebraska	University of Washington
Albany Medical College	University of Wisconsin

It is estimated that there will be close to 7,000 graduates of United States schools and over 900 graduates of Canadian schools in 1954-1955

As shown in table 17, there was an increase again in the number and percentage of graduates in both United States and Canadian schools holding baccalaureate degrees Of the graduates of United States schools, 89.5% held such degrees, and 65.5% of the graduates of Canadian schools held such a degree

PRECEPTORSHIPS

Table 18 lists the medical schools in the United States that offered preceptorships during the 1953-1954 academic year The Medical School at Yale University and the Stritch School of Medicine both discontinued such programs during that year However, Stritch as well as Alabama, which also previously offered a preceptorship program, plan to reinstitute programs again in the coming year The University of California School of Medicine and Hahnemann Medical College instituted new programs

Of the programs offered during the year covered by this report, 13 were elective and 9 were required A total of 1,019 students participated in these programs One of the programs was offered in the last year of a basic med-

TABLE 19 —Students in the Required Intern Year in the United States, 1931 to 1954

Year	Number	Year	Number
1930-1931	1,025	1943-1944	451
1931-1932	1,067	1944 (second session)	447
1932-1933	1,100	1944-1945	452
1933-1934	1,183	1945-1946	488
1934-1935	1,233	1946-1947 *	582
1935-1936	1,213	1947-1948	447
1936-1937	1,255	1948-1949	408
1937-1938	1,132	1949-1950	454
1938-1939	1,152	1950-1951	501
1939-1940	1,152	1951-1952	379
1940-1941	1,058	1952-1953	407
1941-1942	707	1953-1954	203
1942-1943	639		

* Includes additional classes

ical science school, another in the third year, and the remaining 20 were presented either in the summer between the third and fourth year or during the fourth year

The programs varied in duration from two weeks to three months with a median of five and one-half weeks Only four of the programs in effect have been in existence more than 5 years and only two more than 10 years, one of which (Wisconsin) was instituted in 1925

REQUIRED INTERNSHIPS AND NATIONAL INTERNSHIP MATCHING PROGRAM

It is interesting to note that despite variations there has been over the past years a definite, and now almost completed, trend toward abandoning the internship as a requirement for graduation from medical school in the United States Table 19 illustrates this trend Two of the three schools represented by the 203 students who served this requirement in 1953-1954 have already abandoned the required internship Thus, it can be anticipated that figures for 1954-1955 will establish another record low

Table 20 indicates the schools in the United States and Canada that continue this requirement It should be noted that of the two United States schools listed, one (Duke) does not withhold the medical degree until the internship is completed but has an arrangement with its students whereby they agree to spend two years after graduation in a hospital or laboratory before entering practice For this reason, students from Duke University have never been included in the figures in table 19

The almost total disappearance of the requirement of the internship as a prerequisite to medical school graduation has not been due to the shifting of responsibility for this requirement from the medical schools to the state

TABLE 20 —Medical Schools Requiring an Internship

United States
Stanford University School of Medicine
Duke University School of Medicine *
Canada
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Ottawa Faculty of Medicine
Laval University Faculty of Medicine
University of Montreal Faculty of Medicine

* Degree not withheld until internship completed

licensing boards, for only 26 states, the District of Columbia, Alaska, Canal Zone, Guam, Hawaii, and Puerto Rico include such a requirement in their licensing laws It would seem more likely that the abandonment of this has been brought about by the realization that graduates of U S medical schools have themselves over a period of many years maturely recognized the value and necessity of further formal training

Records of the graduates in 1952-1953 were examined, and it was learned that all but two of these 6,668 graduates had accepted internships or in a few instances positions as fellows or assistant residents Both graduates who did not take some form of graduate training were married women students, and neither of them entered practice Not a single graduate of that year entered practice directly from medical school

It has been observed that almost all of the misunderstandings and objections to the National Intern Matching Program have arisen as a result of lack of familiarity with the objectives and methods of the program To facilitate better understanding of this program on the part of individual physicians and hospital staff groups the following statement, presented by the director of operations of the National Intern Matching Program, is presented

The National Intern Matching Program, Incorporated, operates the "matching program" for internship appointment now entering its fourth year of operation It offers an orderly method of intern placement consonant with American principles of individual freedom Some 10,700 internships at 820 hospitals (each approved for internship training by the American Medical Association) are offered each year to the 6,400 plus graduating

seniors who seek internships. Some 4,500 internships will go unfilled, no matter what system is used. Approximately 1,500 of these positions are later filled by foreign trained graduates, second year interns, etc. Competition among hospitals is, therefore, extremely keen. Certain popular hospitals have a plethora of applicants while others do not attract a single applicant. These popular internships are filled (146 hospitals were completely filled in 1954, 246 of the 1,032 separate intern training programs were filled) and this creates great student competition, in spite of the surplus of internships.

The National Intern Matching Program is completely controlled and operated jointly by the American Medical Association, the American Hospital Association, the Association of American Medical Colleges, the Catholic Hospital Association and the American Protestant Hospital Association. Two student representatives at large, with full voting rights, are members of the Board of Directors. It is a non profit corporation.

The core of the matching program is freedom of choice for students and hospitals, and the preservation of the bargaining rights of both. This freedom is the cornerstone of the program. Applications are initiated by student and hospital, and not by the matching program. Students apply to hospitals which interest them for whatever reasons appeal to them. Each student makes out, privately, a confidential preference list of internships, and each hospital confidentially ranks its student applicants. The student's confidential preference list gives him an opportunity to escape pressures from hospitals and advisers. The NIMP matches the choices as follows:

Each student is matched with the hospital highest on his list that will accept him (i.e., that cannot fill with other applicants the hospital prefers to him). If his first choice hospital does not want him, his chances at his second (or third or fourth) are in no way diminished. Thus he goes only where he wants to go, and always to the internship *he* most desires which will accept him.

Each hospital gets everyone of its applicants it desires (to the number it specifies) provided that the applicant prefers this hospital to any other one open to him. If more applicants desire the hospital than the hospital has openings, the hospital's ranking list determines who the preferred men will be. If a highly ranked man goes elsewhere, by his own choice, the hospital's chances for lower ranked men are in no way reduced. The hospital gets only men it wants, and as many as it wants, *provided* it can attract enough applicants that prefer it to other hospitals.

Thus, in full freedom of choice the plan works as a clearing house, not interfering with, but giving effect to the choices of both hospital and student. It has removed, insofar as possible, the great pressures that caused recriminations once common to the internship placement scene. The broken contracts, the pressuring and signing up of students long before the senior year for internship commitments, and other undesirable aspects have now largely disappeared. An overwhelming majority of both students and hospitals felt that the initial matching program was successful. Operational improvements in technique and more complete understanding have followed and the matching program today, has the continued support of hospitals, deans and students.

The matching program does *not* allocate, distribute, or otherwise control interns or internships. It does *not* set quotas or approve hospitals for internship training. It does *not* by its nature, favor any group of hospitals, or in any way advise students where to intern.

The Student American Medical Association and all other student groups which have studied the matching program endorse it fully. Every medical and hospital organization or committee which has studied the matching program and reviewed its operations have approved it. These include the American Medical Association, the Student American Medical Association, American Hospital Association, Association of American Medical Colleges, Catholic Hospital Association, American Protestant Hospital Association and the National Student Internship Committee.

THE COST OF ATTENDING MEDICAL SCHOOL

In February of 1954, Counts and Stalnaker¹² published an informative statement of the cost of medical education to the student including data as to the sources

of student income and the income of their parents. The data were obtained from 6,251 students in 26 selected medical schools. It was found that the average medical student today spends approximately \$9,200 during his four years of undergraduate medical education. Furthermore, for the average single student most of the financing came from parents, while in the case of married students the chief source of this support was derived from the earnings of the wife.

For purposes of this report, medical school administrators were requested to estimate the minimum and average financial outlay by their students during the academic year 1953-1954 on the basis of expenditures for tuition, special fees, equipment, books, and essential living costs. Seventy-one schools submitted data indicating that the total annual average expenditure by the student was \$2,380. This when multiplied by four gives a total cost of \$9,520 for the entire undergraduate period, a figure closely approximating the average determined from the students by Counts and Stalnaker. Minimum costs were reported to average approximately \$1,690 per year, or \$6,760 for the entire four years.

TABLE 21—Comparison of Tuition Fees 1940-1941 with 1953-1954

	1940-1941	1953-1954	Percentage of Increase
Total number of approved United States schools	76	80	5.3
Number of schools with added fee for nonresident students*	28	33	17.9
Average fee for resident students	\$391	\$633	62
Average tuition fee for nonresident students	\$445	\$772	76
* Cost of living index (1933 to 1939 = 100%)	103	192	87

* Some additional comparisons involving national aggregates may be helpful. These were derived from publications of the United States Department of Commerce and the United States Department of Labor.

Per capita disposable personal income increased from \$433 in 1940-1941 to \$1,566 in 1953 or a 14% increase. Per capita personal consumption expenditures increased from \$352 in 1940-1941 to \$1,452 in 1953 or a 149% increase. The number of weeks wages of production workers in manufacturing necessary to pay the average fee for resident students decreased from 18.2 weeks in 1941 to 9.3 weeks in 1952 or a decrease of 29.6%. The number of weeks wages of production workers in manufacturing necessary to pay the average tuition fee for nonresident students decreased from 15 weeks in 1941 to 11.4 weeks in 1952 or a decrease of 24.5%.

STUDENT FEES

The average tuition fee during 1953-1954 for students who were residents of the state in which the school they entered was located was \$633. The average fee for nonresident students was \$772. In computing this latter sum, tuition figures were included for schools that had no differential between resident and nonresident students.

It was thought that it might be of value to present a comparison between tuition fees in 1953-1954 and 1940-1941, just prior to World War II. This material is given in table 21. The average fee for nonresident students presented represents the average for all schools, not just those that have increased fees for nonresident students. The consumer's price index was used for the cost of living index.

Although there have been substantial increases in tuition fees, the increases have been kept significantly less than the increase in the cost of living. There has been a percentage increase in the number of schools charging additional tuition fees for nonresident students and also

an increase in the average nonresident fee over and above the increase in average resident tuition

Data relative to tuition fees for resident students during 1953-1954 and anticipated fees for the same group during 1954-1955 are presented in table 22. In this table, the medical schools of the United States and Canada have been grouped according to the fees charged. The sums represent one-fourth of the total tuition and special fees charged for the four years of the medical course. Fees in 1954-1955 will range from \$99 to \$1,284, with a median of \$715 and an average of \$645. The median represents no change from 1953-1954 and the average represents an increase of \$12.

SCHOLARSHIP AND LOAN FUNDS IN MEDICAL SCHOOLS

Seventy of the 80 medical schools in the United States reported a total of \$1,029,263.27 in scholarship resources available to medical students from funds held by or directly controlled by the school or university during 1953-1954. The average scholarship fund available was \$14,704, which represents a definite increase over

TABLE 22—Range of Annual Fees in Medical and Basic Science Schools in the United States and Canada

Fees	1953-1954 No. of Schools		1954-1955 No. of Schools	
	United States	Canada	United States	Canada
Less than \$100	1		1	
\$100 to 199	3		2	
200 to 299	4		3	
300 to 399	8	3	9	3
400 to 499	12	7	11	7
500 to 599	7	2	8	2
600 to 699	4		4	
700 to 799	7		6	
800 to 899	20		21	
900 to 999	7		12	
1,000 and over	1		3	
Totals	80	12	80	12

the \$12,014 average indicated by the 62 schools reporting such scholarship funds in 1952-1953. The largest amount reported by any institution was \$143,052 and the smallest was \$100. One other school reported scholarship funds over \$100,000. Thirteen additional institutions indicated scholarship funds in excess of \$25,000 for 1953-1954.

Seventy-three of the medical schools indicated total loan funds available for medical students at \$2,127,850.40, with an estimated \$894,604.50 loaned to their students during 1953-1954. Loan funds varied from a high of \$130,617 to a low of \$1,437 in different institutions, with an average of \$29,148.64 for the group reporting the availability of such funds.

As was indicated in the first résumé on scholarship and loan funds for medical students in the last annual report, there are additional sources of financial aid in the form of resident scholarships from certain states and special subsidies for student residents who agree to locate for practice in small towns or rural areas on completion of their undergraduate medical education and internship. Where interstate cooperative arrangements have been consummated, as in the instance of the Southern Regional Education Board, students receive some assistance through the lower resident tuition rate of the school rather than the augmented out-of-state tuition charged

in most state institutions. A somewhat similar program is developing among the Western states and in New England, and consideration is also being given to the possibility of such a program by the states in the Midwest. Such programs are directed primarily, however, toward medical school financing through support by the regional organization to institutions of the difference between tuition and total basic costs of medical education.

Because of the many variables in available student scholarship and loan funds, there is currently no encyclopedic listing of such resources. Students desiring such information should directly contact the medical school concerned in order to determine what forms of aid are available and the conditions under which they are granted.

INTRAMURAL TEACHING RESPONSIBILITIES OF MEDICAL SCHOOLS FOR OTHER THAN UNDERGRADUATE MEDICAL STUDENTS

At the present time there is no single medical school in the United States in which some instruction is not given to students other than those enrolled in undergraduate medical courses. In fact, the number of persons other than undergraduate medical students who receive part or all of their instruction from medical faculties is over twice as great as the total number of undergraduate medical students. During 1953-1954 medical schools reported 59,430 students other than undergraduate medical students. Table 23 has been modified from previously published tables so as to include physicians and graduate students working toward advanced degrees and to eliminate part-time special students working toward M.D. degrees (included in medical school enrollment data, table 1). It is an analysis of the total number and distribution of these students in each of the medical schools. Table 24 vividly illustrates the rapid increase in these additional intramural teaching responsibilities of medical faculties from 17,906 in 1947-1948 to 59,430 in 1953-1954. Canadian medical schools report a gross total of 5,281 students other than undergraduate medical students receiving instruction in their schools in 1953-1954.

Comparison with last year's analysis indicates that there has been an increase in every category of student except for student technicians receiving instruction from medical school faculties and nonphysician graduate students working for degrees in basic medical sciences. Actual numerical increases in students in the various categories were: dental 525, pharmacy 60, nursing 1,594, nonmedical (arts and science) 2,053, physicians working as fellows 30, physicians taking continuation courses 904, interns whose instruction is a primary medical school responsibility 62, residents whose instruction is a primary medical school responsibility 893, and physicians working toward advanced degrees 201. Student technicians decreased 994, and graduate students in the basic medical sciences were 42 fewer than reported the previous year.

Two areas of concern are present in any situation where a medical school faculty is charged with responsibility for teaching students other than undergraduate medical students. One of these lies in the area of interpretation of the actual cost of undergraduate medical education, and the second major concern is associated

TABLE 23—Intramural Teaching Responsibilities for Other Than Undergraduate Medical Students, 1953-1954

UNITED STATES												
School	Dental Students	Pharmacy Students	Nursing Students	Student Technicians	Arts and Science Students	Physicians in Continuation Courses	Physicians Taking Dual Courses for Specialty Boards	Physicians with Fellowship Appointments	Interns	Residents	Physicians Seeking Advanced Degrees	Other Graduate Students in Medical Sciences
Medical College of Alabama	53		123	46				11	14	10		231
University of Arkansas			19	147					12	85		122
College of Medical Evangelists	42		201	49	6		6	4	15	42		870
Stanford University			120	12	111			26	35	67	1	423
University of California	261	86	214	49	916			37	161	135		1,708
University of Southern California					379		7	4	135	135		735
University of Colorado			190	89	1,232		20	3	47	145	211	2,727
Yale University			429	13	119			82	45	63		815
George Washington University		169	7	370	165			26	22	25		841
Georgetown University	141		127	1				10	8	70	13	438
Howard University	99	68	40	14	26			2				258
Emory University	234		40	7	167			19	34	133		644
Medical College of Georgia			2	4					21	47		159
Chicago Medical School			220	29	3	11	12	7			26	832
Northwestern University											26	15
Stritch School of Medicine											26	3
University of Chicago											26	9
University of Illinois	216	176		33	64	13		21	42	118	5	294
Indiana University	126		535	72	169	383	16	2	21	116	56	735
State University of Iowa	110	82	131	62	452	4	25	4	15	123	9	1,433
University of Kansas		20	173	49	565	1,726		2	14	125	2	1,149
University of Louisville	152		95	11	2	320		6	20	85	9	2,624
Louisiana State University			8			43	3	1	22	77	1	671
Tulane University			130	2	13	247	19	56	86	88	19	194
Johns Hopkins University	28		12	17			19	39				715
University of Maryland		61	49	8	94	82	16	45	85	7		341
Boston University			72	31	24		3					445
Harvard Medical School	28				373	123	62	319				189
Tufts College Medical School	270						53					465
University of Michigan	264	31	415	101	566	617	24		65	250	21	2,472
Wayne University			17			270			66	125	75	515
University of Minnesota	276	102	151		1,634	1,822			20	125	1,670	4,229
University of Mississippi		29	8								1	59
St. Louis University	159		258	147		5			12	23	7	673
University of Missouri			45		533	4						550
Washington University				82	27		10	44	57	131		351
Crelighton University	92		99		6				11	19	19	252
University of Nebraska	26		119	39	124				13	89		370
Dartmouth Medical School			135	14	1				16	53		222
Albany Medical College			213		471				40	49		814
University of Buffalo	122	52	125		225	217		2				731
Columbia University	75		337		162	571	22	21			2	1,120
Cornell University			320			21	12	85				419
New York Medical College			183		91			1	1	23	6	311
New York University			442		146		60		81	83		1,123
State University of New York New York City					16	17			95	108	4	243
State University of New York Syracuse					400				24	70		719
University of Rochester			269	31					52	76		524
Duke University			166	43	10	10	23		57	104		422
University of North Carolina	127	141	85	18	40	424	1		18	55		970
Bowman Gray School of Medicine			151	11					6	38		264
University of North Dakota			129	23	27							194
Ohio State University	575	24	376	223	1,169				39	117		2,657
University of Cincinnati			124	3	2	521	21		52	122	35	89
Western Reserve University	179		195	14	7	84	59	39				604
University of Oklahoma			220	11		598	5	2	29	45		525
University of Oregon			479		2	871			18	74		977
Hahnemann Medical College			117	22				14	10	46		220
Jefferson Medical College							45	12	20	57		162
Temple University			266	22	42		8	18	99	67		391
University of Pennsylvania	16		45		44		135	96	159			73
University of Pittsburgh			729		125	147		6	8	125		1,225
Woman's Medical College of Pennsylvania			50					1	1	11		6
Medical College of South Carolina		55	155	10	12	232	6	14	14	31		674
University of South Dakota					150						2	7
Meharry Medical College	23		34	17		1			12	21		114
University of Tennessee	273	174	250	23		121		29			20	43
Vanderbilt University						35			24	64		14
Baylor University						3	2		67	137	4	291
Southwestern Medical College						340			21	57		352
University of Texas			246	29	2	74			25	117		627
University of Utah			85	10	101	410			15			1,315
University of Vermont			43	13	21				39	21	5	125
Medical College of Virginia	206	213	275	5	59	490	13	5	41	97		1,374
University of Virginia			225	6				16	25	70		392
University of Washington	144	65	175	15	2,940	482	11	9	23	67		4,933
West Virginia University		45		24	12							62
Marquette University	227		277	417	1,613	154	6	5	10		8	455
University of Wisconsin			13		2				12	22		215
University of Puerto Rico												
Totals	4,694	1,727	11,673	1,994	10,674	13,215	821	1,270	1,770	5,429	1,720	2,243
CANADA												
School												
University of Alberta						16					1	9
University of British Columbia		46	182	26	5	112	14	6	47			1
University of Manitoba			250			70			71			471
Dalhousie University	24	14	22		35	429			54		10	2
Queen's University			170		169							377
University of Ottawa			13		12				45			1
University of Toronto	340	92	15				7	57			45	55
University of Western Ontario			87						29	1		7
Laval University				51							17	3
McGill University	65	270		23	107		11				6	17
University of Montreal		55	173		11							455
University of Saskatchewan												
Total	470	477	1,047	140	1,223			63	222		2	153

with the potentiality of overburdening faculty personnel and diluting teaching and research activities to the point where either the undergraduate medical student, other students, or both groups may have less effective opportunities than would otherwise be the case. Reasonably careful departmental analysis and institutional bookkeeping should make it possible to differentiate actual cost factors so that the true value of medical faculty services to other than undergraduate medical students may be delineated, and the actual cost of medical education determined in any institution. Too frequently when a medical school renders service functions to large numbers of students in other areas either no adjustment or a nominal financial adjustment is made, ostensibly to pay for such services. Frequently such reimbursements fall far short of the actual cost of the services rendered and leave the medical school underwriting the difference with this additional load interpreted by the uninformed as part of the cost of medical education. This problem appears to fall in the area of budget and accounting practices of medical schools and universities. The true cost of education

exception of the 44,080 nonmedical (arts and sciences) students who received some instruction in medical schools during this period, all of the remaining 254,458 persons were students in some phase of graduate or postgraduate medical education or in some field such as dentistry, pharmacy, nursing, or technology. There can be little doubt in the mind of anyone giving serious thought to this matter but that graduate and postgraduate education fall within the logical area of responsibility of medical schools if they are adequately covered as far as budget, personnel, and facilities are concerned. Physicians enrolled in continuation courses, in basic medical science courses preparing for specialty boards, fellows, interns, residents, or persons working for advanced degrees in the basic medical sciences account for 182,468 registrations out of the total during this period.

Where basic medical science and clinical instruction is needed in such fields as dentistry, pharmacy, nursing, and technology, 73,508 persons have received part of their instruction from the faculties of medical schools during the past seven years. There can be no question of

TABLE 24 —Intramural Teaching Responsibilities for Other Than Undergraduate Medical Students, 1947-1954

Year	Dental Students	Pharmacy Students	Nursing Students	Student Technicians	Arts and Science Students	Physicians in Continuation Courses	Physicians Taking Basic Science Courses for Specialty Boards	Physicians with Fellowship Appointments	Interns	Residents	Physicians Seeking Advanced Degrees	Other Graduate Students in Basic Medical Sciences	Totals	M.A. Degrees Granted	Ph.D. Degrees Granted
1947-1948	*	*	*	*	478	13,187	2,338	*	*	*	813	1,090	17,900	*	*
1948-1949	*	*	*	*	2,039	16,695	1,097	*	*	*	1,133	1,765	22,320	*	*
1949-1950	*	*	*	*	2,720	17,930	1,087	1,135	1,960	4,345	1,125	2,094	32,390	*	*
1950-1951	3,851	2,497	9,195	1,402	9,838	17,654	1,152	1,238	1,780	4,269	1,561	2,720	57,150	*	*
1951-1952	4,626	2,042	9,629	1,312	9,690	16,829	978	1,204	1,576	4,211	1,905	2,310	55,312	*	*
1952-1953	4,169	1,607	10,080	2,058	8,631	14,401	706	1,240	1,898	4,546	1,419	2,285	54,009	502	258
1953-1954	4,694	1,727	11,683	1,904	10,684	15,315	831	1,270	1,930	5,439	1,620	2,243	59,430	476	282
Total	17,313	7,933	40,590	7,636	44,080	110,011	8,789	6,057	9,180	22,800	9,576	14,507	238,538	978	540

* Figures not available

ing undergraduate medical students in a complex university setting or wherever others are also taught by the school can only be determined by utilizing effective budget and accounting methods.

The question as to whether teaching responsibilities for other than undergraduate medical students may unduly dilute either teaching or research, or both, is a matter of local institutional policy. If a medical school administration is fully aware of the implication of additional teaching services from the standpoint of budget, personnel and facilities and such needs are satisfied, there is no logical reason why either teaching or research in medicine should be diluted in any sense. In fact, with adequate budgets, personnel and facilities, departments of basic medical science carrying such responsibilities may possess even greater potential in both teaching and research than would be the case if their activities were restricted solely to undergraduate medical students and to graduate students in their specific fields.

A glance at table 24, which summarizes the intramural teaching responsibilities of medical schools for other than undergraduate medical students since 1947-1948, highlights a point that is frequently overlooked by those who have discussed and written of this development. With the

the importance of sound indoctrination in the basic medical sciences required in each of these fields. Since these areas of activity are so inextricably interwoven with the over-all field of medical care, it does not seem unreasonable that medical schools should engage in such instructional responsibilities, provided that wherever they are conducted provision is made for adequate budgets, personnel, and facilities, as well as budgeting and accounting practices that accurately delineate the cost factor in each area of activity.

CURRENT STATUS OF MEDICAL EDUCATION AND NATIONAL DEFENSE

Medical Education for National Defense —The Joint Committee on Medical Education in Time of National Emergency, representing the Council on Medical Education and Hospitals of the A M A and the Association of American Medical Colleges, has continued to collaborate closely with the Department of Defense, the armed forces, the Selective Service System, the Public Health Service, the Civil Defense Administration, and other governmental agencies in dealing with problems created for medical education by the continuing defense needs of the nation. Such coordination of effort continues to be of

material assistance in the development of programs and policies designed to deal with these problems

A program for medical education for national defense (MEND) has been a successful experiment in the five institutions (Buffalo, California, Cornell, Illinois, and Vanderbilt) in which it was instituted two years ago. At the outset it was agreed¹³ that 1 Each of the schools in the pilot group should be free to work out its own program in light of the circumstances prevailing in that institution 2 The individual programs should be developed through the faculties of the respective institutions 3 The programs should be designed to stimulate the students and to create appropriate attitudes as well as to teach appropriate material 4 Emphasis should be placed on professional topics 5 The programs should be evaluated as critically as possible

At the conclusion of the first year, the MEND program committee felt that 1 There appeared to be a well-defined and recognized need for modification of medical curricula to make medical graduates better able to cope with medical problems encountered in disaster and war 2 The underlying philosophy of the MEND pilot programs is consistent with sound concepts of medical education 3 The acceptance by faculties, student bodies, representatives of the armed forces, and the Public Health Service of the MEND program had been favorable. Conduct of the program was made possible through federal grants of approximately \$15,000 annually to each of the participating institutions to support the program coordinator, defray travel and other expense

The A M A has endorsed the MEND program as it has been operated in the five pilot schools and has adopted the recommendation of the Council on Medical Education and Hospitals that it be made available to all medical schools on a voluntary basis. Similar endorsement of the program has been given by the Association of American Medical Colleges on the recommendation of their Committee on National Emergency Planning

Selective Service System and Deferment Eligibility — With the exception of minor changes, Selective Service System regulations remain essentially unchanged. The responsibility for the primary classification of registrants rests with the Selective Service local boards. If a person or his employer (college, medical school, or hospital) has requested his deferment and he has been classified as available for military service, then the person or his employer may, within 10 days of the mailing of the classification, file an appeal. If the State Appeal Board should sustain the classification, the registrant or his employer may, if there is a dissenting vote in the appeal board, file a written request with the local board to have the decision appealed to the National Selective Service Appeal Board. If there is no dissenting vote, the state or national director of Selective Service may appeal the case to the President.

The "college student certificate," SSS form 109, has been prescribed for the use of institutions of higher learning including those of medicine, in furnishing the local boards information regarding registrants who are enrolled as students in those institutions. These forms should be submitted to the local boards by the educational institution on request of the registrant. However, the mere filing of such a form does not constitute a request

for occupational deferment since, in order to establish the right of appeal as an interested party, a written request from the college or employer for occupational deferment must accompany the form. The registrant has the right of appeal if exercised in the prescribed 10 days. He can make his appeal informally in writing.

Eligibility for Consideration for Deferment The law states that the President may provide for the deferment of any person whose deferment is equitable and in the national interest. He is also informed that it is the sense of the Congress that provision should be made for the annual deferment from training and service of premedical, pre-dental, and allied preprofessional students in numbers equal to those at present in attendance at colleges and universities. This is provided in the general student deferment program. The President is also directed to establish a national advisory committee to advise the Selective Service System and aid state and local advisory boards in selecting the needed medical, dental, and allied personnel.

The conditions under which students pursuing programs of higher education may be considered for deferment are specified in sections 1622.15 and 1622.25 of the Selective Service Regulations. Within the specified requirements, students of the healing arts are to be considered for deferment in the same manner as students pursuing other undergraduate or graduate courses at colleges, universities, etc.

Any student not previously deferred who is pursuing a full-time course of study is entitled to a single period of statutory deferment, class 1-S, until the end of the academic year. Such deferment does not preclude the possibility of later deferment in class 2-S. Students whose activity in study, research, medical, or other endeavors is found necessary to maintenance of the national health, safety, or interest may be deferred in class 2-S until completion of their training, provided they maintain satisfactory scholastic records. A student who is deferred for study extends his liability for military training and service up to his 35th birthday instead of his 26th, as prescribed for registrants who have never enjoyed a deferment.

In selecting a student for deferment in class 2-S, the Selective Service local boards may, at their discretion, be guided either by the score made by the student on the Selective Service College Qualification Test, or by his record of academic performance.

The College Qualification Test is given for the Selective Service System by the Educational Testing Service of Princeton, N. J. At present, in order to be eligible for deferment on the basis of this test, an undergraduate student must make a score of 70 or more. SSS form 108 has been prescribed for furnishing to the local board the score made on the test. This score is confidential and may be divulged by the local board only to the registrant or one holding his written consent.

To qualify for deferment on the basis of academic performance the nonprofessional student must have maintained the following standing among the male members of his class: freshman year upper one-half, sophomore year, upper two-thirds, junior year upper three-fourths.

¹³ Olson, S. W. *Medical Education for National Defense*. J. W. Edwards, 29-1522 (Jan.) 1964.

A student accepted for admission to medical school after July 1, 1951, for the class next commencing may be deferred provided that during his last full-time year at a college or university he was ranked among the upper one-half of the male members of his class or had a score of 70 or more on the Selective Service Qualification Test.

A student accepted for admission by a graduate school after July 1, 1951, as a full-time student for the class next commencing may be deferred provided in his last full time academic year in a college or university he achieved a scholarship standing among the upper one-half of the male members of his class or scored 75 or more on the qualification test, and provided the graduate school certifies that he is meeting the degree requirements.

Decisions concerning deferment of American students enrolled in foreign universities, including medical students, are the responsibility of the local boards. The local board may accept or reject any claims or evidence presented for deferment.

Status of Interns and Residents The Selective Service System has always recommended the deferment of graduates of medicine to complete one year of internship training. Recently, and in order to prevent calling up men of priority 3 who are in the higher age brackets, Selective Service has stated that men to be given favorable consideration for deferment to complete a residency or more than one year of internship, should be absolutely essential to the operation or maintenance of the hospitals in which they are employed. Selective Service is of the opinion that there is a sufficient number of priority 4 young men to fill the needs of hospitals for residents.

The National Advisory Committee to the Selective Service System has indicated that all physicians in priority 1 and priority 2 and those in priority 3 born after Aug 30, 1922, will be needed by the armed forces and has advised that they apply for commissions about the time of completion of their internships. A few persons in these categories may be recommended for deferment by the Selective Service local boards for teaching, research or public health, or because they are rendering essential service in isolated communities and cannot be replaced.

In addition, the only persons in this group who can justifiably be recommended for deferment are those who are accepted for training in the scarcity specialties and whose services are required to meet the essential needs of medical and dental schools or hospital services. The specialties in which critical shortages exist are anesthesiology, physical medicine and rehabilitation, psychiatry, radiology, neurology, pathology, public health, orthopedic surgery, oral surgery, and the basic medical sciences. Those few persons in these groups for whom deferment is necessary may be deferred in class 2-A by the Selective Service local boards. The recommendation of the advisory groups in all such cases is desirable.

Status of Faculty Members Since the majority of the faculty members of medical schools are under 50 years of age, they are required to register with the Selective Service System as indicated under Public Law 779. No policy has been announced by the Selective Service System on the granting of deferment to faculty members. However, the National Advisory Committee has recommended that, as a general policy, essential members of medical, dental, and veterinary medical faculties be held

in their teaching positions until such time as replacements are found. This recommendation applies especially to persons in the basic science departments and includes persons in priorities 1 and 2. This policy is not a blanket recommendation for deferment from military service for all teachers. Part-time teachers, who devote only a small portion of their time to teaching, and certain of the younger full-time teachers in priorities 1 and 2 will be expected to enter the military services.

Status of the "Doctor-Draft" Law of 1953 Public Law 84, 83rd Congress, approved by the President, June 29, 1953, amended the Universal Military Training and Service Act. It, and the previous amendment, Public Law 779, 81st Congress, are known as the "Doctor-Draft" law.

The effective date of the whole Universal Military Training and Service Act, as now amended, is extended to July 1, 1955. No change was made in the age limit prescribed in the previous amendments, which required that all physicians, dentists, and allied specialists, under the age of 50, must register with their Selective Service local boards, when required to do so by proclamation of the President. These special registrants remain liable for induction up to the age of 51. Therefore, all new medical graduates under the age of 50 must register with their Selective Service local boards as physicians, regardless of any previous registration, within five days of the receipt of the degree of Doctor of Medicine, provided they do not hold a commission in an armed forces reserve. When the degree is not granted until the completion of an internship, this special registration is accordingly deferred.

As under previous provisions of the act, registrants will be arranged in four priorities signifying the order of induction. However, the criteria for such an arrangement under these priorities have been modified. The major changes enacted by the new amendments are those which provide for greater recognition of prior military service. A registrant will now receive credit for all service performed either as an officer, or as an enlisted man, since Sept 16, 1940, regardless of whether it was before or after participation in an AST or V-12 program, or deferment by the Selective Service System for professional education prior to March 31, 1947. Also, recognition is given for military service performed in the armed services of a country allied with the United States prior to Sept 2, 1945, while so allied.

Whereas, formerly physicians who were educated in part, or in whole, at government expense, or were deferred by the Selective Service System while completing their professional education, needed 21 months of service to qualify for assignment in priority 4, they now need only 17 months. As a result of this change, a number of physicians formerly in priorities 1 and 2 have been reassigned in priority 4. The periods of service for men called to active duty or inducted under the new law were also revised. Those with 9 months or less of service must serve 24 months. Those with 9 to 12 months will serve 21 months. Those with 12 to 15 months service will serve 18 months, and those with 15 to 21 months service will serve 15 months. Those physicians in priority 4 who have had 21 months or more of service since Sept 16, 1940, are no longer liable to induction or recall, except in time of war or national emergency declared by Congress.

"Active service" and "active duty" are defined as full-time duty since Sept 16, 1940, in the service of the United States Army, Navy, Marine Corps, Coast Guard or Public Health Service, including reserve components, time spent during World War II, by conscientious objectors, in work of national importance, service performed before Sept 2, 1945, in the armed forces of countries that were allies of the United States during World War II and service performed as a physician or dentist for the Panama Canal Health Department between Sept 16, 1940, and Sept 2, 1945

Specifically excluded from consideration as "active service" is time spent in V-12 or AST programs, in military internships, residencies or senior student programs, time spent in military service for the sole purpose of undergoing physical examination, and training entered into after June 29, 1953. The law continues to permit deferment of those persons whose activities are essential to the national health, safety, or interest

It is the duty of the National Advisory Committee and the voluntary state and local committees of the Selective Service System to make recommendations to the Selective Service System concerning the essentiality or availability of special registrants who are being classified by their local boards. This duty includes recommendations concerning residents, faculty members, and those engaged in essential laboratory and clinical research

The latest amendment made to the basic "Doctor-Draft" act was Public Law 403, approved June 18, 1954. This amendment makes it possible for the armed services to retain on duty, but in enlisted status, persons serving under the "Doctor-Draft" act whose loyalty is questioned, or for security reasons. This amendment, therefore removed the mandatory requirement that physicians and dentists be given commissions

Status of Medical Military Scholarships—During recent years suggestions have been made in regard to the possible development of military medical scholarships with the objective of training career personnel. Initial proposals have differed from some earlier suggestions in that the plans are not primarily to provide aid to needy students enrolled in all schools but represent a means of subsidization of a number of students in return for a pledge to serve after graduation in military establishments. It is a business proposition between the student and the armed services. The A M A has recommended that the establishment of such scholarships be endorsed providing the following safeguards are imposed: (1) that the student be not approached until he has fully matriculated in the medical school, (2) that the student not expect nor receive special consideration so far as meeting the required standards of scholarship, behavior, and ethics are concerned and that failure in these areas shall automatically terminate the scholarship arrangement with the student, and (3) that the total number of students on such scholarships in any year's class in all of the schools and the number in a class in a single school not exceed 5%. It is believed that any act creating such scholarships should have a reasonable "escape" clause satisfactory to the student and to the military authorities if circumstances warrant. To the date of publication no concrete proposal has been presented to Congress for establishment of such scholarships

Foreign Medical Schools and Students

FOREIGN STUDENTS IN MEDICAL SCHOOLS IN THE UNITED STATES

Much attention has been given of late to graduates of foreign medical schools seeking licensure to practice in this country and also to American citizens studying medicine in foreign schools. Little note has been taken of the fact that the educational facilities in the United States are contributing significantly to the medical education of citizens of foreign countries

In 1953-1954 there was a total of 348 foreign citizens enrolled as students in 53 medical schools in the United States. These were fairly evenly distributed with 101 in the first year class, 104 in the second, 78 in the third, and 65 in the fourth year class. The highest enrollment in any of the schools was 34, and the average for schools having foreign students in attendance was 6.6. Fourteen schools had foreign students in all four classes and three schools had foreign students in only one class.

During the same period, according to data reported by the Health Resources Advisory Committee, there were 5,589 noncitizens serving as interns, residents, or house officers in approved hospitals in this country. It is unfortunate that exact information is not available as to how many of both of these groups are here on student visas with the obligation of returning to the country of origin on the completion of their study, for this would more accurately reflect the contribution of our educational system to foreign medicine than do total numbers

AMERICAN STUDENTS IN FOREIGN MEDICAL SCHOOLS

In the reports on medical education for the two preceding years, statistics were given on the number of citizens of this country who were studying medicine abroad. A serious effort was made to collect such information again so that it could be included in this report.

Unfortunately, the returns to date of the inquiries sent to foreign medical schools and other informed agencies are not sufficient to provide a reliable over-all view. The data on hand do not indicate any major change from last year, but because they are so incomplete, valid observations could not be drawn from them. Every effort shall be made to obtain a broad base of information for the next annual report.

Students who plan to study medicine abroad are also cautioned to determine whether or not the credentials that they may obtain will be recognized in this country. It is apparent that many of these students have not fully informed themselves concerning the educational standards of foreign schools. While there are many such schools whose excellence is rather widely recognized in the United States, there are others whose credentials may not be accepted by the licensing authorities. Students who are planning to study medicine abroad are therefore urged to communicate directly with the licensing boards of states where they hope to practice and to determine in advance of enrollment whether or not the credentials that they may receive will be acceptable.

The Council has prepared a compendium of information on foreign medical education and the status of foreign medical credentials in the United States. Reprints of this publication will be furnished on request, without charge.

FOREIGN MEDICAL SCHOOLS

In February, 1950, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges first published a list of foreign medi-

No foreign medical school can be included in the list solely on the basis of information furnished to the two councils by the school itself, by its graduates, or by any foreign government or agency. The data upon which evaluation of foreign schools are based are obtained

TABLE 25—Foreign Medical Schools

List Prepared by the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges

On the basis of information presently available, the Council on Medical Education and Hospitals of the American Medical Association and the Executive Council of the Association of American Medical Colleges are of the opinion that medical institutions and medical organizations in the United States would be justified in considering current and past graduates of the following foreign medical schools on the same basis that they consider graduates of approved medical schools in the United States

Belgium

Free University of Brussels Faculty of Medicine
(Université Libre de Bruxelles Faculté de Médecine)
Catholic University of Louvain Faculty of Medicine
(Université Catholique de Louvain Faculté de Médecine, or
Katholieke Universiteit te Leuven)
University of Ghent Faculty of Medicine
(Universiteit te Gent Faculteit der Geneeskunde or
Université de Gand Faculté de Médecine)
University of Liège Faculty of Medicine
(Université de Liège Faculté de Médecine)

Brazil

University of São Paulo Faculty of Medicine
(Universidade de São Paulo Faculdade de Medicina)

China

Peking Union Medical College

This recommendation applies to all those graduates who were granted the degree of Doctor of Medicine from the date when the first degrees were conferred in 1921 until and including the class of 1943. The education of students in the last class that of 1943 was interrupted by World War II, therefore some students finally completed their studies as late as 1949. However their diplomas were issued as of the class of 1943. Following the Communist conquest of China the name of this school was changed to the China Union Medical College. The recommendation does not apply to this school.

Denmark

University of Copenhagen Faculty of Medicine
(Københavns Universitet Lægevidenskabelige Fakultet)

Finland

University of Helsinki Faculty of Medicine
(Helsingfors Universitet Medicinska Fakulteten)
Medical Faculty, Turku University
(Turun Yliopiston Lääketieteellinen Tiedekunta)

Lebanon

American University of Beirut School of Medicine

Netherlands

University of Amsterdam Faculty of Medicine
(Universiteit van Amsterdam Geneeskunde Faculteit)
State University of Groningen Faculty of Medicine
(Rijks Universiteit te Groningen Geneeskunde Faculteit)
State University of Leiden Faculty of Medicine
(Rijks Universiteit te Leiden Faculteit der Geneeskunde)
State University of Utrecht Faculty of Medicine
(Rijks Universiteit te Utrecht Faculteit der Geneeskunde)

Norway

University of Oslo Faculty of Medicine
(Kongelige Frederiks Universitet Medicinske Fakultet)

Sweden

Royal Charles University Medical Faculty, Lund
(Kungl. Karolinska Universitetet Medicinska Fakulteten)
Charles Medico Surgical Institute, Stockholm
(Karolinska Mediko Kirurgiska Institutet)
Royal University of Uppsala Medical Faculty
(Kungl. Universitetet i Uppsala Medicinska Fakulteten)

Switzerland

University of Basel Faculty of Medicine
(Universität Basel Medizinische Fakultät)
University of Bern Faculty of Medicine
(Universität Bern Medizinische Fakultät)
University of Geneva Faculty of Medicine
(Université de Genève Faculté de Médecine)
University of Lausanne Faculty of Medicine
(Université de Lausanne Faculté de Médecine)
University of Zurich Faculty of Medicine
(Universität Zurich Medizinische Fakultät)

The recommendation with respect to the following medical schools in Switzerland applies only to those graduates of Swiss medical schools who hold the Swiss Federal Diploma issued by the Federal Department of the Interior (Eidgenössisches Departement Des Innern Département Fédéral de l'Intérieur) and obtainable only by Swiss citizens who hold the Certificate of Medical Studies (Akademische Zeugnis, Certificat d'Études Médicales), or who hold one of the following certificates which the Swiss Universities issue to those, not citizens of Switzerland, who complete a course of study and pass examinations equivalent to those taken by Swiss citizens in qualifying for the Swiss Federal Diploma.

University of Basel—Academic Certificate on passing the medical examination for physicians (Akademische Zeugnis über die bestandene Fachprüfung für Ärzte)

University of Bern—Medical diploma on passing examination for medicine (Ärztliches Fakultätsdiplom über die bestandene Fachprüfung für Ärzte)

University of Geneva and University of Lausanne—Certificate of Medical Studies (Certificat d'Études Médicales)

University of Zurich—Medical diploma for foreigners (Medizinisches Diplom für Ausländer)

United Kingdom

England

University of Birmingham Faculty of Medicine
University of Bristol Faculty of Medicine
University of Cambridge Faculty of Medicine
University of Durham Medical School, Newcastle upon Tyne
University of Leeds Faculty of Medicine
University of Liverpool Faculty of Medicine
University of London†
University of Manchester Faculty of Medicine
University of Oxford Faculty of Medicine
University of Sheffield Faculty of Medicine

Northern Ireland

Queen's University of Belfast Faculty of Medicine

Scotland

University of Aberdeen Faculty of Medicine
University of Edinburgh Faculty of Medicine
University of Glasgow Faculty of Medicine
University of St. Andrews Medical School, St. Andrews and Dundee

Wales

Welsh National School of Medicine, University of Wales, Cardiff
The recommendation applies only to those physicians trained in the United Kingdom who hold medical degrees from the universities listed. The recommendation does not apply to those physicians who received their medical training at these universities or their affiliated hospital medical schools but who obtained their qualifications through the examinations of the licensing corporations of the United Kingdom. It must be observed, however, that registration in the United Kingdom is granted equally to physicians holding the diplomas of the licensing corporations and to physicians holding university medical degrees.

† Work for the medical degree of the University of London is offered at the following hospital medical schools

Charing Cross Hospital Medical School
Guy's Hospital Medical School
King's College Hospital Medical School
London Hospital Medical School

Middlesex Hospital Medical School
Royal Free Hospital School of Medicine
St. Bartholomew's Hospital Medical College
St. George's Hospital Medical School

St. Mary's Hospital Medical School
St. Thomas' Hospital Medical School
University College Hospital Medical School
Westminster Hospital Medical School

cal schools whose graduates they recommend for consideration on the same basis as graduates of approved medical schools in the United States. This list is intended as a guide for institutions and organizations in this country who deal with foreign medical graduates and also as an aid to American students who plan to study medicine abroad.

largely from recognized American medical educators known to both councils who, while traveling abroad, are able to visit foreign medical schools. The councils do not maintain a staff to carry out such visits, nor can they accept from foreign schools that desire inclusion in the list offers to subsidize inspections by representatives of the councils. In evaluating information about

foreign medical schools, the councils are advised by the Advisory Committee on Foreign Medical Credentials, which is a committee composed of a large group of outstanding individuals representing medical education, educational foundations, licensing bodies, various government agencies, and other organizations interested in the problems of foreign trained physicians

The list is acknowledged to be a tentative one and the position of the councils with respect to schools not named in the list is that they neither approve nor disapprove of them. Therefore, the credentials of graduates of schools not named in the list must be evaluated by those other agencies, organizations, or institutions to whom these individuals apply for recognition. The 50 foreign medical schools now included in the list are given along with certain qualifying statements in table 25

The Council on Medical Education and Hospitals, with the cooperation of certain other interested organizations, is currently making an intensive study of all aspects of the problem presented by the many foreign trained physicians seeking licensure in this country. Although the program as it currently exists remains in effect, other methods of dealing with this problem will be given serious consideration during this course of study

Postgraduate Continuation Courses for Physicians

This section is devoted to an analysis of the postgraduate courses offered in the United States during the period from July 1, 1953, to June 30, 1954. It will also deal briefly with some of the recent developments of unusual interest. The Council has long been interested in postgraduate medical education and for the past 18 years has published semiannually in *THE JOURNAL* a list of courses available in the United States. The current listing, which covers courses offered from July 1, 1954, to Jan 15, 1955, was published in the June 12, 1954, issue of *THE JOURNAL* and is available in reprint form. The next listing will cover the period from Jan 16, 1955, to Aug 31, 1955. Following this list, all future postgraduate course listings by the Council will appear annually and will cover a period roughly corresponding to the academic school year, i.e., Sept. 1 through Aug 31 of each year. It is expected that the first such annual listing will be published sometime during the summer of 1955.

The data presented in this section have been derived from forms submitted by the numerous institutions and organizations offering postgraduate courses. Inasmuch as forms are only sent to those who are definitely known to have postgraduate programs, it is realized that some organizations inaugurating new programs last year may not have been included. All such groups are urged to notify the Council so that they may be placed on the mailing list in order to be considered for inclusion in next year's listing.

The courses discussed in this section are of variable length, subject and objective. Although most of them are strictly postgraduate in nature, a number include basic science and other courses intended to prepare physicians in part for certification by the American boards in the specialties. At the present time no attempt to dis-

tinguish such courses has been made. However, with the publication of the first annual listing, all courses of this nature that have formerly been included in the postgraduate list, will be distinguished as "graduate courses."

In December, 1952, the House of Delegates of the A M A adopted the following definitions submitted by the Council on Medical Education and Hospitals covering medical education beyond the internship:

Graduate medical education consists of those programs pursued by individuals possessing the degree of Doctor of Medicine which are primarily designed to prepare them for entrance into a specific field of medicine. Such programs include all specialty training as well as academic work in the clinical and basic medical sciences, and may lead to board certification or an advanced academic degree. Graduate programs are usually conducted on a full time basis over a period of from one to several academic years. They are generally of a formal nature as residencies, fellowships, preceptorships or intramural academic work and are generally conducted by medical schools, hospitals, or graduate medical schools.

Postgraduate medical education consists of those educational activities engaged in by individuals possessing the degree of Doctor of Medicine which are primarily designed to keep them abreast of their own particular field in medicine. Such activities are intended to both refresh the individual in various aspects of his basic medical education and inform him of the new developments within his field, and do not lead to any formal advanced standing in the profession. Postgraduate programs may be on a full or part-time basis, but are usually of relatively short duration, i.e., days to months. The organization of these programs may be formal or informal, more often the latter. They are conducted in a great variety of forms using many methods and techniques. They are sponsored by a diverse group of institutions, schools, and organizations. Postgraduate programs may also include special training in very narrow fields of medicine such as subspecialties and new areas of study, as well as short basic science courses.

Future annual listing of postgraduate and graduate courses by the Council will distinguish all courses on the basis of the above definitions.

Courses Offered in 1953-1954—For this discussion all postgraduate courses have been placed in one or another of three general groups. The first includes short courses of less than five days' duration and will be referred to throughout simply as short courses. The second group includes courses of five days' duration or longer, and will be referred to as long courses. The third group will be referred to as miscellaneous courses and includes clinical conferences, graduate assemblies, seminars, study and circuit courses, and other postgraduate activities.

Total Course Offerings and Attendance—During the year 1953-1954 there were a total of 1,684 courses offered in the United States. It will be seen from table 26 that this represents approximately a 22% increase over the number of courses offered last year. Most of this increase was accounted for by the greater number of long courses of five days' duration or more. Although there was a moderate increase in the number of short courses offered the miscellaneous group actually decreased markedly in number. It is interesting to note that the previous moderate decline in the total number of courses offered in 1952-1953 apparently is not continuing into a full scale downward swing. During the year 150 long courses were cancelled but only a few of the short and miscellaneous courses were withdrawn.

Table 26 also gives the attendance figures for the various groups. Short courses showed a marked rise in total attendance over the previous year, whereas long courses had dropped in attendance in this period despite the increase in offerings. Of unusual interest is the marked increase in attendance among the miscellaneous group despite the reduction in opportunities of this type. A total registration of 77,017 physicians was reported for about 95% of the courses. The remaining courses did not report attendance. Data are not available from which it is possible to determine the number of physicians who enrolled in multiple courses. Without such knowledge it is impossible to determine what percentage of the total physician population enrolled in continuation courses during the past year. Nevertheless, the total registration in such courses during 1953-1954 indicates the need and augmented demand for postgraduate study.

Distribution of Postgraduate Courses by State—All but 10 of the states reported some form of postgraduate courses during the year. There is evidence to indicate that even these 10 states had some postgraduate opportuni-

TABLE 26 —Postgraduate Courses Offered and Attendance, 1945-1954

Year	Short Courses of Less Than Five Days Duration		Long Courses of Five or More Days Duration		Miscellaneous Clinical Conferences, Graduate Assemblies, Study and Circuit Courses and Seminars		Total Courses and Attendance	
	Total Courses	Attendance	Total Courses	Attendance	Total Courses	Attendance	Total Courses	Attendance
1945-1946	151	4 140	1,070	19 991	52	21,824	1,276	45 935
1946-1947	239	10 274	1,291	23 062	21	20 475	1,551	59 811
1947-1948	490	31 569	1,279	24,878	25	26,336	1,800	82 503
1948-1949	304	16 821	1,074	28,007	67	38,038	1 445	63 886
1949-1950	161	10,023	1,080	24 087	129	40 708	1 370	76,318
1950-1951	420	7,438	1 067	14 890	79	23 835	1,566	46 183
1951-1952	200	7 454	1,543	17 311	120	40,970	1,869	66 935
1952-1953	324	9 452	805	23 793	23	31,363	1,382	64,068
1953-1954	343	14 212	1 185	16,908	166	46,897	1,684	77,017
Totals	2,047	117,883	10,394	193,627	902	289,506	18,948	601,016

ties within their borders, but information of such nature as to make it possible to include these in this report are not available. Table 27 indicates the concentration of postgraduate opportunities in a few states to be evident from the fact that 1,290 or 76.5% of the total 1,684 courses offered were in either California, Illinois, Massachusetts, Michigan, New York, or Pennsylvania. New York led all other states in total number of courses offered, and this was also true for long courses taken separately. However, Illinois led the field for short courses and Michigan for the miscellaneous group. Short courses were offered in all but 14 of the states, long courses in all but 15, and miscellaneous courses in all but 16.

Arrangement and Duration of Courses—Table 28 shows that 616 or 35.6% of all courses offered were part-time courses, the remaining majority being full time. Practically all of the miscellaneous group were of the full time type, as were 78% of the short courses. However, only a little over 54% of the long courses were full time. Short courses ranged in duration from three hours to four and a half days, and among the part-time group some included 30 hours of instruction extending over 15 weeks. Long courses ranged from five days to three years. The miscellaneous group ranged from one hour

to two years with varying total durations. Many of the courses in all three groups had variable time arrangements, and still others could be arranged to suit the requirements of the student. Many courses were offered repeatedly during the year, especially among the long group. Courses were offered in every month of the year, the fall and spring being especially popular seasons for all types of courses. Most of the courses in all groups were open to all physicians, only a few being restricted to specialists.

Facilities, Faculty, and Methods Employed—Facilities in which instruction took place varied considerably. Hospitals, medical schools, or postgraduate medical schools were the most frequent sites for training in all types of courses. However, clinics, hotels, and other

TABLE 27 —Postgraduate Courses by State, 1953-1954

State	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Alabama	1	8	17	21
Arizona	1		1	2
Arkansas	8			8
California	40	18	15	73
Colorado	7	5	2	14
Connecticut	2	11	3	16
Delaware	1		1	2
District of Columbia	3	5	1	9
Florida	7	2	2	11
Georgia	5	9	1	15
Illinois	81	211	4	296
Indiana	1	2	3	6
Iowa	28	1	2	31
Kansas	11	1	1	13
Louisiana	4	14	2	20
Maryland	6	12	1	19
Massachusetts	8	69	1	78
Michigan	6	66	81	153
Minnesota	19	10	1	30
Mississippi		1	2	3
Missouri	1	8	1	10
Nebraska	1		1	2
New Jersey		2		2
New Mexico			1	1
New York	16	616	17	649
North Carolina	5	8	0	13
Ohio	24	13	2	39
Oklahoma	5	5	8	18
Oregon	1	4		5
Pennsylvania	10	65	0	75
South Carolina	3		3	6
South Dakota		1		1
Tennessee	11	1	4	16
Texas	12	1	5	18
Utah	3	3	1	7
Vermont	2	2		4
Virginia	7	1		8
Washington	1	5	4	10
Wisconsin	2	4	1	7
Puerto Rico	1	1	2	4
Totals	343	1,185	156	1,684

facilities were used entirely or in part for many courses. In most cases, some combination of these various facilities was employed.

The majority of the instructors were drawn from the ranks of medical school faculties, but a significant amount of teaching was contributed by physicians without medical school appointments. Most of the instruction within a state was given by faculty derived from within the same state, but a sizable number of instructors were brought in from other states. This was true in the case of states with medical schools as well as those without schools.

Instruction was reported to be purely didactic in about a quarter of the courses of all types, and purely clinical in a slightly smaller proportion of courses. The remainder were reported as employing both didactic and clinical methods.

Content of Courses—Courses were offered in 59 different subjects that covered practically all fields of medi-

cine to a greater or lesser degree (see table 29) Courses in surgery were more numerous than any other single subject, accounting for 13% of all offerings General medicine, obstetrics and gynecology, neuropsychiatry, ophthalmology and otolaryngology, and cardiovascular diseases followed in order Surgery was the most frequent subject for both short and long courses, but general medicine led in the miscellaneous group

Sponsorship and Financing of Postgraduate Courses—Practically every four year medical school in the country, with few exceptions, offered or took part in some postgraduate activities during the year In addition, a large number of individual hospitals and clinics offered courses Numerous state and county medical societies, as well as a number of national, regional, state, and local specialty societies offered or sponsored courses in their areas of interest. Several health departments and a number of federal agencies offered programs, in addition to some voluntary health agencies and miscellaneous groups, such as study clubs and some departments of general universities

Fees ranged from \$5 for some short courses to over \$1,000 for some long courses Although a number of short and miscellaneous courses charged no fee at all, very few of the long courses were without a fee In at least one case, a fellowship stipend was offered to a

TABLE 28—Postgraduate Courses by Type 1953-1954

Type	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Full time	263	645	155	1,063
Part time	70	540	1	616
Totals	343	1,185	156	1,684

student taking the course It was not unusual for fees to vary for residents and nonresidents in which a state-owned medical school offered the course, as was also the case with members and nonmembers of some medical organizations sponsoring courses Many courses received support from health departments, voluntary health agencies, foundations, pharmaceutical firms, medical societies, federal agencies, and individual contributors

Recent Developments—Although all of the developments in postgraduate education cannot be touched upon here, a few significant items will suffice to indicate the trends in this field.

The ever increasing number of organizations and institutions involved in postgraduate education in various areas of the United States has led to a tremendous amount of duplication and unnecessary competition among courses This is being met by programs of coordination among the various sponsoring organizations in some areas Where there has been but a single medical school, such coordination has required only the cooperation of the state medical society, the medical school, state health department, and perhaps a few other interested agencies However, coordination of postgraduate education on a state level, where a large number of medical schools and other agencies are involved, poses more difficult problems but has been achieved in Massachusetts The Massachusetts Postgraduate Medical Institute, established a few years ago, has effectively passed through the experimental stage and has proved a success in that

area The three medical schools, the school of public health, the state medical society, the state health department, and representatives of general and special medical societies and voluntary health agencies have pooled their resources and talent to coordinate their postgraduate efforts and expand the total program to meet the needs of all physicians in the area Many other areas of the country are studying this principle as a possible solution to their own problems

In the past year there have been a number of new attempts to offer "canned" postgraduate programs to

TABLE 29—Postgraduate Courses by Subject, 1953-1954

Subject	Short Courses	Long Courses	Miscellaneous Courses	All Courses
Administrative medicine		1		1
Allergy	6	23	1	30
Anatomy	4	86	1	41
Arthritis	2	3	2	7
Anesthesiology	4	41	1	46
Bacteriology		13	4	17
Basic sciences	4	12		16
Biochemistry		1		1
Blood transfusions		1		1
Bronchoesophagology		7		7
Cardiovascular disease	31	62	14	107
Culdoscopy		1		1
Cytology		3	1	4
Dermatology and syphilology	5	21	5	31
Diabetes	5	1		6
Electrocardiography	4	84		88
Electroencephalography		3		3
Endocrinology	5	12		17
Endoscopy		16		16
Forensic medicine		2		2
Fractures	3	5		8
Gastroenterology	6	23		34
Geriatrics	3			3
Hematology	3	20		23
Hospital training		2		2
Industrial medicine		21	1	22
Microscopy and photomicrography		4		4
Internal medicine	10	73	10	93
Legal medicine	2		1	3
Malignant disease	6	8	5	19
Medicine general	47	21	70	144
Military medicine		1		1
Neurology and psychiatry	9	97	7	113
Neurological surgery		2		2
Obstetrics and gynecology	41	94	4	139
Ophthalmology	1	17		18
Ophthalmology and otolaryngology	20	66		111
Orthopedic surgery	4	19		23
Orthopedics		7		7
Otolaryngology		6		6
Otology		1		1
Parasitology		2		2
Pathology	2	46	1	49
Pediatrics	12	23	6	46
Physical medicine	2	9		11
Physiology	7	21		28
Physiological chemistry		8	4	12
Poliomyelitis	1	4		5
Proctology	5	13		18
Psychoanalytic training		1		1
Public health		14		14
Pulmonary diseases	5	11	2	18
Radiology	5	66		73
Roentgenology		1		1
Surgery	60	150	7	217
Therapy	3	1		4
Tropical medicine		2		2
Urology	5			5
Venerical disease	1	3		4
Totals	343	1,185	156	1,684

physicians in their homes by mail The University of Kansas School of Medicine has offered a correspondence course in electrocardiography that has been favorably received by physicians in outlying areas The home study is being supplemented by a period of intramural work in the medical center as a part of the complete program

The University of Utah School of Medicine has developed a series of "postgraduate kits," which include a syllabus, phonograph record, a filmstrip, and viewer, all in a compact carrying case These are sent as units on loan to individual physicians in outlying areas With the limited number of units available the program has been of such success that its expansion is soon expected

Another example of the "canned program" is the development by the Audio-Digest Foundation with the California Medical Association of magnetic tape recordings accompanied by filmstrips that together constitute a package course. These are in addition to the already widespread use of the regular Audio-Digest weekly tape recording of digests of current medical literature, which physicians receive on a subscription basis. It will be of interest to medical educators generally to note that the profits of this program have all been assigned to the American Medical Education Foundation.

One of the most dramatic and significant developments in postgraduate education in the past year has been in the new applications of television to this field. During the fall, winter, and spring, the American Cancer Society sponsored a series of 40 color telecasts originating in the East and reaching six centers in the East and Midwest. These were in effect closed-circuit programs since the special receiving equipment was only available to the medical societies cooperating in the program. The program included numerous topics, all related to cancer, and was enthusiastically received by the groups viewing it. Future expansion of the program to include other fields of medicine is currently under study.

While the color television program mentioned above could only be viewed by large groups with special equipment, postgraduate education was also brought directly into the physician's home by television last fall and spring. The University of Utah sponsored two series of programs for physicians over open-circuit, public-channel television using early morning hours at which time the public did not know the channel was operating. In this way it was possible to bridge the gap between the medical center and the physician in his home. The programs have been kinescoped and made available to other medical schools interested in using them.

The New York Academy of Medicine during its annual postgraduate fortnight last fall utilized another technique that would make possible bringing postgraduate education into the physician's home by television. This involves the use of a telecast that is received only as a clouded image unless the receiving set is equipped with a special decoding device and a decoding card. This system was used at the fortnight before a group audience to demonstrate the principle of "scrambled image" television as a means of bringing postgraduate education into the physician's home on open circuit without the possibility of chance viewing by the lay public.

Although all of these experimental programs have contributed much to the development of "long-distance" postgraduate teaching, at least one medical school, the University of Kansas, has developed extensive television facilities with long-term plans to use them for undergraduate and graduate teaching.

In the past year there were two national conferences on postgraduate education. The first was held in Atlantic City last fall under the auspices of the Committee on Continuation Education of the Association of American Medical Colleges. At this meeting a number of individual papers were presented, and postgraduate program directors from many states were able to discuss their problems together. The second such conference was during the Annual Congress on Medical Education and Licensure in February. The program consisted of three panels of

outstanding postgraduate medical educators who discussed various aspects of a preliminary report of the Council's current study of postgraduate medical education.¹⁴ This too served as a valuable opportunity for a meeting of minds on this subject among educators concerned with directing postgraduate programs throughout the country.

For the past two years the Council has been engaged in a comprehensive survey of the whole field of postgraduate medical education. This study was prompted by the growing interest and activity in postgraduate education and by requests for guidance in developing programs by many institutions and organizations all over the United States. The survey has included a study of the institutions and organizations engaged in producing postgraduate programs. All of the medical schools, schools of public health, graduate and postgraduate medical schools, state medical societies, and other groups engaged in postgraduate work have been visited in the course of the survey to gain first hand information on the problems in this field. The individual courses offered by these institutions and organizations have been analyzed carefully for objectives, content, time and place arrangements, methods, and administration.

In addition to this study of the producers of postgraduate education, by means of questionnaires a large, random, representative sample of the practicing physician population has been canvassed to include the consumers' views in the completed study. The questions were designed to elicit information on the physicians' habits of continuation education in general, as well as their specific uses of and needs for postgraduate courses.

A preliminary report of the results of the statistical phase of the survey was prepared early in 1954, and a preview of this report was published in May of this year.¹⁴ The final report of the entire survey is being prepared and will be published in 1955.

Postgraduate medical education is rapidly becoming recognized as an integral part of the whole structure of medical education. Its use is becoming more widespread and the institutions and organizations sponsoring such courses are becoming more numerous. In the past year, there have been indications of increased efforts to bring postgraduate education to the physician by means of "canned programs" or by television. Moreover, those concerned with the administration of postgraduate programs have had increasing opportunity to exchange ideas at nationwide meetings sponsored by the Association of American Medical Colleges and the A. M. A. Coordination programs are emerging as an answer to the difficult problems of administration in postgraduate education. In the past year postgraduate opportunities increased in numbers and became more widely distributed, and attendance figures rose encouragingly. There is every indication that postgraduate education is making long strides both quantitatively and qualitatively, and it is hoped that the publication next year of the Council's survey of the field will aid this development.

14. Vollan D. D. Preview of Principal Findings of American Medical Association Survey of Postgraduate Medical Education report of the Council on Medical Education and Hospitals. J. A. M. A. 155: 389-392 (May 22) 1954. Panel Discussion: The Objectives of Postgraduate Medical Education, Annual Congress on Medical Education and Licensure, February, 1954, Part 2, Reprint of Medical Education in the United States and Canada, to be published.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama, 620 South 20th Street Zone 5—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 the medical school assumed title to Jefferson Hospital and Hillman Hospital now used as the chief clinical teaching unit of the Medical College of Alabama. The entering class each year is limited to 80 students. The School of the Basic Medical Sciences on the University Campus established in 1920 and its faculty were moved to Birmingham in June 1945 and expanded into the present four year Medical College of Alabama. The medical college is coeducational. Minimum requirements are three years of college work. Tuition for legal residents of Alabama is \$400 per academic year plus incidental fees of \$50. Transfer students to the upper classes not residents of Alabama are charged an equalization fee of \$250 each session. The registration for the 1953-1954 session was 295 graduates 61. The last session began for the first three classes on Sept. 21, 1953. The fourth year class started on Sept. 8, 1953. The session ended for all classes on May 30, 1954. The next session for the first three classes will begin Sept. 15, 1954 and end May 29, 1955. The dean is James J. Durrett, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$380 a year. Enrollment is restricted to residents of Arkansas. The registration for the 1953-1954 session was 318 graduates 72. The last session began Sept. 21, 1953 and ended June 14, 1954. The next session will begin Sept. 20, 1954 and will end June 13, 1955. The dean is Hayden C. Nicholson, M.D.

CALIFORNIA

Loma Linda—Los Angeles

College of Medical Evangelists, Loma Linda and 312 North Boyle Avenue, Los Angeles Zone 33—Organized in 1909. The first class was graduated in 1914. The basic science departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of college work are required for admission. Each of the four years of the medical curriculum consists of a nine month session. In addition there is a required clinical clerkship in the summer between the junior and senior years. The yearly tuitions including fees are respectively \$1,286 \$1,274.50 \$1,277.75 \$1,295.25. The registration for 1953-1954 was 365 including 92 seniors who received their degrees June 6. For the 1953-1954 session the beginning and closing dates were: freshmen Aug. 27, 1953-June 4, 1954; sophomores Aug. 30, 1953-June 4, 1954; juniors and seniors Sept. 13, 1953-June 4, 1954. For the 1954-1955 session the beginning and closing dates are: freshmen Aug. 29, 1954-June 3, 1955; sophomores Sept. 1, 1954-June 3, 1955; juniors and seniors Sept. 12, 1954-June 3, 1955. The dean is Harold Shryock, M.D., Loma Linda.

Los Angeles

University of Southern California School of Medicine, 2025 Zonal Avenue, Zone 33—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1899. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons established in 1904 became the Medical Department of the University of Southern California. Its activities were suspended in 1920 reorganized in May 1928 under present title. Entrance requirements are three years of college work. Coeducational since organization. Annual fees amount to approximately \$920. Registration for 1953-1954 was 273 graduates 72. The last session began Sept. 21, 1953 and ended June 12, 1954. The next session will begin Sept. 20, 1954 and will end June 11, 1955. The dean is Gordon E. Goodhart, M.D.

San Francisco

University of California School of Medicine Medical Center San Francisco Zone 22—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909 by legislative enactment, the College of Medicine of the University of Southern California at Los Angeles became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years each containing two semesters of 16 weeks each. The fees are \$334 per academic year. Non-residents are charged \$250 additional each year. The registration for the 1953-1954 session was 309 graduates 74. The last session began Sept. 14, 1953 and ended June 18, 1954. The next class will begin Sept. 13, 1954 and will end June 16, 1955. The associate dean is John B. Lagen, M.D.

Stanford—San Francisco

Stanford University School of Medicine, 2398 Sacramento Street, San Francisco—The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford which is 30 miles southwest of San Francisco adjoining the city of Palo Alto. The post office is Stanford. Organized in 1908 when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is \$870. The registration for 1953-1954 was 239 graduates 64. The last session for all classes began Sept. 28, 1953 and ended June 9, 1954. The next session will begin Sept. 27, 1954 and will end June 15, 1955. The dean is Windsor Cooper Cutting, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue, Zone 20—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine were merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are three years of collegiate work. The fees average \$655 per academic year. Nonresidents are charged \$2,000 additional each year. The registration for 1953-1954 was 305 graduates 81. The last session began Sept. 19, 1953 and ended June 4, 1954. The next session will begin Sept. 28, 1954 and will end June 10, 1955. The dean is Robert C. Lewis, Ph.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street, Zone 11—Initial organization of the School of Medicine was completed in 1812 following passage of a bill by the Connecticut General Assembly in 1810 granting a charter for "The Medical Institution of Yale College" to be conducted under joint supervision of the College and the Connecticut State Medical Society. Formally opened in 1813, first degrees conferred 1814. In 1884 with the approval of the Medical Society, the original charter was amended to place the school definitely in the control of the College as the Medical School of Yale College. The name Yale College was changed to Yale University in 1887 and the name of the Medical School was automatically changed. The present name was adopted in 1918. Coeducational since 1916. The requirements for admission are three years of college work. The fees average \$829 per academic year. The registration for 1953-1954 was 303 graduates 63. The last session began Sept. 23, 1953 and ended May 29, 1954. The next session will commence Sept. 29, 1954 and will end June 4, 1955. The dean is Vernon W. Lippard, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, North West, Zone 7—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of nonveterans but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average \$960 per academic year. Registration for 1953-1954 was 455 graduates 107. The last session for freshmen started Sept. 14, 1953 and ended May 22, 1954. The sophomore class started Sept. 14, 1953 and ended May 22, 1954. The junior class started Aug. 26, 1953 and ended May 14, 1954 and the senior class started on May 25, 1953 and ended on May 22, 1954. The date of graduation was June 7, 1954. The next session for freshmen and sophomores will begin Sept. 13, 1954 and end on May 21, 1955. The junior session began Aug. 25, 1954 and will end May 13, 1955. The senior session began May 24, 1954 and will end May 21, 1955. The date of graduation will be June 6, 1955. The dean is Francis M. Forster, M.D.

George Washington University School of Medicine, 1335 H Street, Northwest, Zone 5—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1906 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. Three years of college work are required for admission. The tuition is \$550 per academic year. Registration for 1953-1954 was 340 graduates 78. The last session began Sept. 21, 1953 and ended June 9, 1954. The next session will begin Sept. 20, 1954 and will end May 8, 1955. The dean is Walter A. Burdorm, M.D.

Howard University College of Medicine, 520 W. Street, Northwest, Zone 1—Chartered in 1867. Organized in 1869. The first class was graduated in 1871. Coeducational since organization. The minimum requirements are four years of collegiate work but practice the bachelor's degree. The course covers four years of 33 weeks each. The fees are respectively \$411 \$561 \$561 \$561. The registration for 1953-1954 was 299 gradu-

ates 69 The first session began Sept 21, 1953 and ended June 4, 1954 The next session will begin Sept 20, 1954, and will end June 3, 1955 The dean is Joseph L. Johnson, M.D.

GEORGIA

Atlanta

Emory University School of Medicine, 36 Butler Street (University P. O.)—Organized in 1854 as the Atlanta Medical College. After several mergers and reorganization became Emory University School of Medicine in 1915. Three years of collegiate work are required for admission. The course of study is four academic years of 36 weeks each. The fees for each of the four academic years are \$800. The registration for 1953-1954 was 285, graduates 70. The first session for first and second years began Aug. 27 and Sept. 1, 1953, and ended June 5, 1954. Third and fourth year classes began Aug. 3, 1953, and ended June 5, 1954. The next session will begin Sept. 16 for first year class, Sept. 20 for second year and Sept. 1, 1954 for third and fourth year classes and will end June 4, 1955. In 1953, the departments of anatomy, bacteriology, biochemistry, pharmacology and physiology of the School of Medicine were consolidated with these same departments in the Schools of Dentistry and Nursing to form the Division of Basic Sciences in the Health Services. The dean is Richard Hugh Wood, M.D.

Augusta

Medical College of Georgia, University Place—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1913, the name was changed to the University of Georgia School of Medicine. On Jan. 18, 1950 it became the Medical College of Georgia. Property transferred to the university in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of college work are required for admission. Fees for 1954-1955, \$412 per academic year for residents of Georgia, nonresidents, \$712. Only bona fide residents of Georgia admitted (with exception of A. S. T. and V. 12 Program students during World War II). The registration for the 1953-1954 session was 304, graduates 73. The 1954-1955 session for the fourth year class will begin Sept. 6, 1954 and end June 6, 1955, the first, second and third year classes will begin Sept. 16, 1954, and end June 4, 1955. The dean is Harry B. O'Rear, M.D.

ILLINOIS

Chicago

Chicago Medical School, 710 South Wolcott Avenue—Founded in 1912 the Chicago Hospital College of Medicine. In 1919 the name of the institution was changed to the Chicago Medical School. The school moved its former location to its present site in the Medical Center in 1930. The Chicago Medical School is a nonsectarian coeducational institution. It is chartered in the State of Illinois as a nonprofit institution. A collegiate degree is required for admission. The yearly tuition and fees are, respectively, \$671, \$880, \$847, \$649. The registration for 1953-1954 was 280, graduates 134. The last session for freshmen began Oct. 5, 1953, and for sophomores July 6, 1953, and ended June 19, 1954. The junior and senior session began Oct. 5, 1953, and ended for seniors June 26, 1954. The junior class will end Sept. 23, 1954. The next session for freshmen, juniors, and seniors will begin Oct. 4, 1954 and will end June 18, 25 and 18, 1955, respectively. The sophomore class began July 6, 1954, and will end June 18, 1955. The president is John J. Sheinin, M.D.

Northwestern University Medical School, 303 East Chicago Avenue, Zone 11—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is three years of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. The total fees are \$930 each year. The registration for 1953-1954 was 533, graduates 136. The last session began Sept. 30, 1953, for freshmen, sophomores, and juniors and ended June 12, 1954. The senior session began June 17, 1953, and ended June 14, 1954. The next session will begin Sept. 29, 1954 for freshmen, sophomores, and juniors and will end June 11, 1955. The senior session began June 16, 1954, and will end June 13, 1955. The dean is Richard H. Young, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue, Zone 12—Organized in 1915 by acquisition of Bennett Medical College, which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Three years of collegiate work are required for admission. The fees are \$675 a year. The registration for 1953-1954 was 336, graduates 83. The last session for freshmen and sophomores began Sept. 28, 1953, and ended June 19, 1954, the session for juniors and seniors began Sept. 8, 1953, and ended May 29, 1954 for seniors, June 5, 1954, for juniors. The next session will begin Sept. 27, 1954, and will end June 18, 1955, for the first two classes, it began Sept. 7, 1954, and will end June 4, 1955, for juniors, for seniors the session began June 7, 1954, and will end May 28, 1955. Each student has a five week vacation sometime in the year. The dean is John F. Sheehan, M.D.

University of Chicago, the School of Medicine, 58th Street and Ellis Avenue, Zone 37—Organized in 1924 as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work of the first two years in the medical courses has been given on the University Quadrangles since 1899, but the last two years were offered only at Rush Medical College, which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. A special function of the school is to train people for making contributions to the advancement of medical science. The requirements for admission are three years of collegiate work. The curriculum covers 12 quarters of work. The tuition fee averages \$904. The registration for 1953-1954 was 280, graduates 69. Quarters begin in March, June, September and December of each year. The dean of the Division of the Biological Sciences is Lowell T. Coggeshall, M.D.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912 and was restored in March, 1913 when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital Chicago became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average \$288 per academic year, nonresidents pay an additional fee of \$300. The registration for the 1953-1954 session was 667, graduates 169. The last session began Sept. 28, 1953 and ended June 19, 1954. The next session will begin Sept. 27, 1954, and will end June 18, 1955. The dean is Granville A. Bennett, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington, 1040 West Michigan Street, Indianapolis, Zone 7—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington, the remainder of the work at Indianapolis. Regular fee for two semesters of work is \$320 for residents of Indiana and \$600 for nonresidents. The registration for the 1953-1954 session was 575, graduates 139. The present session for junior and senior students began June 15, 1954, and will end June 14, 1955. The next session for sophomore students will begin Sept. 15, 1954, and end June 11, 1955. The dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is \$256 each year for residents of Iowa and \$566 for nonresidents. The registration for 1953-1954 was 458, graduates 116. The last session began Sept. 24, 1953 and ended June 11, 1954. The next session will begin Sept. 23, 1954, and will end on June 10, 1955. The dean is Norman B. Nelson, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence, Thirty Ninth and Rainbow Boulevard, Kansas City—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894 and the Medicochirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. At present the first year is given on the university campus at Lawrence while the remaining three years are given at the Medical Center in Kansas City, Kansas. Coeducational since 1880. The requirement for admission is three years of collegiate work, four years preferred. The fees are \$475 per year, the nonresident fees are \$925 per year. The registration for 1953-1954 was 456, graduates 105. The last session began June 9, 1953, and ended May 29, 1954. The next freshman class will begin Sept. 8, 1954. The sophomore class of 1954 will begin its work on Sept. 16, 1954, at Kansas City. The junior and senior classes began June 8, 1954 and will end May 28, 1955. Three fourths of each junior and senior class is in school each quarter of the school year while one fourth is on vacation (juniors) or preceptorship (seniors). The dean is W. Clarke Wescoe, M.D., Kansas City.

KENTUCKY**Louisville**

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department. In 1908 the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 its name was changed to the University of Louisville School of Medicine. Coeducational since organization became nonsegregational in 1951. Three years of collegiate work are the minimum requirements for admission. Tuition is \$800 for residents of Kentucky and \$1,200 for nonresidents per school year. These figures include special fees excepting graduation fee of \$10. The registration for 1953-1954 was 381 graduates 92. Administratively the school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. Academically the senior and junior years are on a trimester basis the sophomore year is divided into four unequal periods and the freshman year into three unequal periods. The last session began Sept. 14 1953 and ended June 5 1954. The next session begins on Sept. 13 1954 and will end on June 4 1955. The dean is J. Murray Kinsman M.D.

LOUISIANA**New Orleans**

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 12—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session began in October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years collegiate work is required for admission. Total fees \$120 each year for residents of Louisiana additional tuition of \$400 each year for nonresidents. The registration for 1953-1954 was 448 graduates 107. The last session began Aug. 31 1953 and ended May 29 1954. The current session began Aug. 30 1954 and will end May 28 1955. The dean is William W. Frye, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue, Zone 12—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1836 and in all subsequent years except 1863-1865 inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average \$800 per academic year. The registration for the 1953-1954 session was 516 graduates 128. The last session began on Sept. 14 1953 and ended on June 1 1954. The next session will begin Sept. 13 1954 and will end May 31 1955. The dean is M. E. Lapham M.D.

MARYLAND**Baltimore**

Johns Hopkins University School of Medicine, 710 North Washington Street—The nucleus of a medical faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees average \$939 per academic year. The registration for 1953-1954 was 294 graduates 77. The last session began on Sept. 28 1953 and ended June 8 1954. The next session will begin Oct. 4 1954 and will end June 14 1955. The dean is Philip Bard, Ph.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, 522 West Lombard Street, Zone 1—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work are required for admission. The tuition fees average \$533 for residents of the state for nonresidents \$250 additional. The registration for 1953-1954 was 404 graduates 96. The last session began Sept. 17 1953 and ended June 5 1954. The next session will begin Sept. 16 1954 and will end June 4 1955. The dean is H. Boyd Wylie M.D.

MASSACHUSETTS**Boston**

Boston University School of Medicine, 80 East Concord Street, Zone 18—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College founded in 1848 was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average \$881 per year. The registration for 1953-1954 was 288 graduates 66. The last session for freshmen sophomores and juniors began Sept. 14 1953 and ended May 29 1954. The last senior class began June 15 1953 and ended June 6 1954. The present senior class began June 14 1954 and will end June 5 1955. All other classes will be enrolled Sept. 13 1954 and the session will end May 28 1955. The dean is James M. Faulkner M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15—Organized in 1782. The first class graduated in 1788. At least two years of collegiate work are required for admission. The fees average \$880. Beginning with the academic year 1954-1955 the fees will average \$1,050. The registration

for 1953-1954 was 531 graduates 148. The last session began Sept. 28 1953 and ended on June 17 1954. The next session for freshmen, sophomores, and juniors will begin Sept. 27 1954 and will end June 16 1955. The senior class began on June 7 1954 and will end June 16 1955. The dean is George Packer Berry M.D.

Tufts College Medical School, 136 Harrison Avenue, Zone 11—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission although exceptions are occasionally made for outstanding students. Enrollment is generally limited to residents of the New England states graduates of New England colleges and sons or daughters of alumni. The course covers four years. Total fees for each of the four years respectively \$863 \$858 \$858 \$863. The registration for 1953-1954 was 449 graduates 110. The last session for freshmen sophomores and juniors began Sept. 23 1953 for seniors June 15 1953 and all classes ended June 13 1954. The present session began for seniors on June 14 1954 and for the other classes will begin Sept. 22 1954 and will end June 12 1955. The dean is Joseph M. Hayman Jr., M.D.

MICHIGAN**Ann Arbor**

University of Michigan Medical School—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed 1915. Coeducational since 1870. The entrance requirements are three years of collegiate work. The fees average \$400 per academic year nonresidents \$700 a year. The registration for 1953-1954 was 728 graduates 155. The last session began Sept. 21 1953 and ended June 12 1954. The next session will begin Sept. 20 1954 and will end June 11 1955 except for seniors who are on a rotation schedule and whose session begins June 21 1954 and ends June 11 1955. The dean is A. C. Furstenberg M.D.

Detroit

Wayne University College of Medicine, 1401 Rivard Street, Zone 7—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is three years in an accredited college or university. Until further notice enrollment is limited to residents of the State of Michigan. The fees average \$537 for the school year. The registration for 1953-1954 was 277 graduates 65. The last session began Sept. 14 1953 and ended June 12 1954. The next session will begin Sept. 13 1954 and will end June 11 1955. The dean is Gordon H. Scott, Ph.D.

MINNESOTA**Minneapolis**

University of Minnesota Medical School, Zone 14—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883 was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Doctor of Medicine (M.D.) which is granted at the end of the course. Total fees are \$361.50 per academic year for residents and \$700 for nonresidents. The registration for 1953-1954 was 490 graduates 133. The last session began Sept. 28 1953 and ended July 17 1954. The next session will begin Sept. 27 1954 and will end July 17 1955. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks in the senior year the spring quarter is 11 weeks in length and graduation is in June. The dean of medical sciences is Harold S. Diehl M.D.

MISSOURI**St. Louis**

St. Louis University School of Medicine, 1-02 South Grand Boulevard, Zone 4—Organized in 1901 as the Marion Sims Beaumont Medical College by union of Marion Sims Medical College organized in 1890 and Beaumont Hospital Medical College organized in 1886. First class graduated in 1902. It became the School of Medicine of St. Louis University in 1903. Completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of minimum are accepted by preference. The fees average \$962.25 per year. The registration for 1953-1954 was 491 graduates 132. The last session began Sept. 15 1953 and ended June 1 1954. The next session will begin Sept. 14 1954 and will end June 1 1955. The dean is James W. Colbert Jr., M.D.

Washington University School of Medicine, 660 South Kingshighway, Zone 10—Organized in 1822 as the Medical Department of St. Louis University. The first class graduated in 1823. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1931 it became the Medical Department of Washington University. In

1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work are required for admission. The fees average \$906. The registration for 1953-1954 was 366, graduates 96. The last session began on Sept. 14, 1953, and ended June 9, 1954. The next session will begin on Sept. 13, 1954, and will end on June 8, 1955. The dean is Carl V. Moore, M.D.

NEBRASKA

Omaha

Crelighton University School of Medicine, 302 North Fourteenth Street, Zone 2—Organized in 1892 as the John A. Crelighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Three years of collegiate work are required for admission. The tuition fees average \$509 per academic year. The registration for 1953-1954 was 300, graduates 70. The last session began Sept. 14, 1953, and ended June 3, 1954. The next session will begin Sept. 13, 1954, and will end June 2, 1955. The dean is F. G. Gillick, M.D.

University of Nebraska College of Medicine, Forty Second Street and Dewey Avenue, Zone 5—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. The University of Nebraska College of Medicine was established in Lincoln in 1883 and in 1902 the Omaha Medical College became a part of the University of Nebraska and has continued with the present title College of Medicine, University of Nebraska. The instruction of the first two years was given at Lincoln and of the last two years at Omaha until 1913 when the work of all four years was transferred to Omaha. Coeducational since 1892. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average \$450 per academic year, nonresidents are charged \$615. The registration for 1953-1954 was 344, graduates 92. The last session for seniors began July 6, 1953, and ended June 12, 1954. The last session for freshmen, sophomores and juniors began Sept. 23, 1953, and ended June 19, 1954. The present session for seniors began July 6, 1954, and will end June 18, 1955. The next session for freshmen, sophomores and juniors will begin Sept. 22, 1954, and will end June 18, 1955. The dean is James P. Tollman, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue, Zone 3—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average \$1,007 per academic year. The registration for 1953-1954 was 212, graduates 53. The last session began on Sept. 14, 1953, for the freshman and sophomore classes, the freshman year ending on June 3, 1954, and the sophomore year on May 29, 1954, the junior year began on Sept. 8, 1953, and closed on May 20, 1954, for the seniors the last session began on June 1, 1953, and ended on May 31, 1954. The present senior class began on June 1, 1954. The next session for the freshmen and sophomores will begin on Sept. 8, 1954, and will end on May 28, 1955. The current session for the juniors began Sept. 7, 1954, and will end on May 24, 1955. The dean is Harold C. Wiggers, Ph.D.

Buffalo

University of Buffalo School of Medicine, 3435 Main Street—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The minimum requirement for admission is four years of collegiate work including certain prescribed science subjects. The fees average \$878. The registration for 1953-1954 was 279, graduates 70. The last session began Sept. 21, 1953, and ended June 12, 1954, for freshmen, sophomores and juniors, and began on Aug. 31, 1953, and ended June 5, 1954, for seniors. The next session will begin Sept. 20, 1954, and end June 11, 1955, for freshmen, sophomores, and juniors, and began Aug. 30, 1954, and will end June 4, 1955, for seniors. The dean is Stockton Kimball, M.D.

New York City

Columbia University College of Physicians and Surgeons, 630 West 168th Street, Zone 32—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average \$900 per academic year. The registration for 1953-1954 was 465, graduates 111. The last session began June 8, 1953, for juniors, and June 1, 1953, for seniors, and ended on May 29, 1954. The last session for freshmen and sophomores began on Sept. 14, 1953, and ended May 29, 1954. The present session began on June 7, 1954, for juniors and June 1, 1954, for seniors and will begin on Sept. 13, 1954, for the freshmen and sophomores and will end May 31, 1955. The dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue, Zone 21—Organized in 1898. Coeducational since organization. All students matriculated must be graduates of approved colleges or scientific schools or seniors in absentia who will receive the bachelor's degree from their college on successful completion of one or more years of the medical

course. The fees average \$925 a year. The registration for 1953-1954 was 337, graduates 83. The last session began for senior students June 22, 1953, and ended June 9, 1954. The freshman, sophomore and junior classes began Sept. 9, 1953, and ended June 9, 1954. The present session for seniors began July 5, 1954, and will begin for the remaining three classes on Sept. 15, 1954, and all classes will end June 8, 1955. The dean is E. Hugh Luckey, M.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869, the title New York Homeopathic Medical College and Hospital in 1887, the title New York Homeopathic Medical College and Flower Hospital in 1908, the title New York Medical College and Flower Hospital in 1936, the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. First class graduated in 1861. Coeducational since 1919. Four years of college work leading to a baccalaureate degree required for admission but a degree is preferred. The fees average \$865 per academic year. The registration for 1953-1954 was 478, graduates 112. The last session began Sept. 14, 1953, and ended June 2, 1954. The next session will begin Sept. 13, 1954, for first and second year students. Third year students began June 7, 1954, and fourth year students May 23, 1954. The Executive Dean is Ralph E. Snyder, M.D.

New York University College of Medicine, 550 First Avenue, Zone 16—This is the undergraduate medical college of the New York University Bellevue Medical Center, which also includes the New York University Postgraduate Medical School and the University Hospital. The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 the Bellevue Hospital Medical College, which had been established in 1861, joined New York University and the consolidated school was called the New York University-Bellevue College of Medicine. In 1935 the present name was adopted. In 1947 the charter of the university and the statutes were amended establishing the New York University Bellevue Medical Center, which includes the College of Medicine. The entrance requirements are not less than three full years in an approved college of arts and sciences, and preference is given to those who have completed four years. This medical school has been coeducational since 1919. The fees average \$917 per academic session. The registration for 1953-1954 was 530, graduates 121. The last session began Sept. 14, 1953, and ended May 22, 1954, for freshmen and sophomores, May 29, 1954, for seniors, and Sept. 11, 1954, for juniors. The next session begins Sept. 13, 1954, for freshmen, sophomores and juniors, and Sept. 21, 1954, for seniors. This session will end May 21, 1955, for freshmen and sophomores, Sept. 10, 1955, for juniors, and June 4, 1955, for seniors. The dean is Currier McEwen, M.D.

State University of New York College of Medicine, 350 Henry Street, Zone 2—Originally organized in 1858 as the collegiate department of the Long Island College Hospital. The first class was graduated in 1860 and the last class in 1930. Chartered in 1930 as the Long Island College of Medicine with the first class graduated in 1931 and the last in 1949. It was merged with the State University of New York on April 5, 1950, and the first class under the university was graduated in June 1950. Coeducational. Three years of collegiate work, including specified courses are required for admission. The fees are \$715 per academic year. The registration for 1953-1954 was 573, graduates 131. The last session for the seniors began Sept. 14, 1953, and ended June 5, 1954. The last session for juniors began on Sept. 21, 1953, and ended on June 5, 1954. The last session for freshmen and sophomores began on Sept. 21, 1953, and ended June 12, 1954. The next session for freshmen, sophomores, and juniors begins Sept. 20, 1954, and will end on June 11, 1955. For the seniors the next session will begin Sept. 13, 1954, and will end on June 4, 1955. The acting dean is Howard Potter, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 20—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are \$800 per academic year. The registration for 1953-1954 was 280, graduates 69. The last session began Sept. 21, 1953, and ended June 12, 1954. The next session will begin on Sept. 13, 1954, and will end on June 11, 1955. The dean is Donald G. Anderson, M.D.

Syracuse

State University of New York College of Medicine, 766 Irving Avenue, Zone 10—Organized in 1872 when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title 'The College of Physicians and Surgeons of Syracuse University'. Assumed title Syracuse University College of Medicine in 1875, when a compulsory three year graded course was established. The College of Medicine was merged with the State University of New York on June 26, 1950, when the present title was assumed. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. Three years of collegiate work are required for admission. The fees average \$715 per academic year. The registration for 1953-1954 was 285, graduates 66. The last session began Sept. 14, 1953, and ended June 12, 1954. The next session will begin Sept. 13, 1954, and end June 11, 1955. The dean is William R. Willard, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year including 1910 when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. The tuition is \$600 per year for residents for nonresidents an additional \$600 per year. The registration for 1953-1954 was 226. The North Carolina legislature in 1947 appropriated funds for the expansion of the school to the full four years. The first senior class of 48 students graduated June 7, 1954. The last regular session began Sept. 18, 1953 and ended June 7, 1954. The next session will begin Sept. 14, 1954 and will end June 6, 1955. The dean is W. Reece Berryhill, M.D.

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of three quarters each year. There is no summer quarter between the first and second year but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. This accelerated schedule is optional and students may take their first year and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the curriculum committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one-quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the committee on health affairs that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are \$922.50 for three quarters. The registration for 1953-1954 was 316 graduates 80. During 1954 the quarters begin Jan. 4, March 29, July 6, Oct. 4 and end March 20, June 12, Sept. 18 and Dec. 18. The next first year class will be enrolled Oct. 4, 1954 and will end June 11, 1955. The dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College. Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Three years of college work are required for admission. Clinical departments operate four quarters in the year however the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research for study elsewhere or for earning money to help defray expenses for their education. Tuition is \$750 per school year. The registration for 1953-1954 was 200 graduates 50. The last session for the freshman class began Oct. 5, 1953. Sophomores Oct. 5, 1953. Juniors and seniors July 13, 1953 and ended for freshmen, sophomores, juniors and seniors on June 12, 1954. The present junior and senior classes began July 12, 1954 and will end on June 11, 1955. The next freshmen and sophomore classes will begin Oct. 4, 1954 and will end June 11, 1955. The dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine. Eden and Bethesda Avenues, Zone 19.—Organized in 1819 as the Medical College of Ohio. Became the Medical College of the University of Cincinnati in 1896. In 1909 the Miami Medical College (founded in 1852) was merged with the University of Cincinnati's Medical School. Coeducational since organization. Three years of collegiate work are the minimal requirements for admission but a bachelor's degree is strongly recommended. Tuition for legal residents of Cincinnati is \$575 a year plus breakage fees \$125 additional for those not legal residents. The registration for 1953-1954 was 352 graduates 89. The last session for freshmen and sophomores began Sept. 21, 1953 and ended May 31, 1954. The last session for juniors and seniors began Sept. 8, 1953 and ended for juniors June 12, 1954 and for seniors May 31, 1954. The present session for juniors and seniors began Sept. 7, 1954 and will end for juniors June 11, 1955 and for seniors May 28, 1955. The next session for freshmen and sophomores will begin Sept. 20, 1954 and will end May 28, 1955. The dean is Stanley E. Dorst, M.D.

Cleveland

Western Reserve University School of Medicine. 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission four years preferred. The fees average \$800 per academic year. The registration for 1953-1954 was 335 graduates 85. The last session began Sept. 23, 1953 for freshmen and ended June 16, 1954. For sophomores the last session began Sept. 16, 1953 and ended June 18, 1954. For juniors the last session began Sept. 16, 1953 and ended June 18, 1954. For seniors the last session began Aug. 31, 1953 and ended June 17, 1954. The next session for freshmen will begin on Sept. 22, 1954 and will end June 18, 1955. The next sophomore session will begin Sept. 8, 1954 and will end June 17, 1955. The next session for juniors will begin Sept. 8, 1954 closing date to be announced. The next senior session will begin Aug. 30, 1954 and will end June 15, 1955. The dean is Joseph T. Wear, M.D.

Columbus

Ohio State University College of Medicine. Neil and Eleventh Avenues, Zone 10.—The present College of Medicine became a part of the Ohio State University in 1914. It incorporates all the previous medical college interests in central Ohio standing upon a foundation of six medical schools: the Medical Department of Willoughby University of Lake Erie, 1834-1846; the Willoughby Medical College of Columbus, 1846-1847; the Starling Medical College 1847-1907; the Columbus Medical College, 1875-1892; the Ohio Medical University 1892-1907; Starling-Ohio Medical College 1907-1914. Graduates of these colleges by action of the board of trustees are considered alumni of the Ohio State University. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average \$525 per academic year and \$255 additional for nonresidents. The registration for 1953-1954 was 575 graduates 136. The last session began Sept. 29, 1953 and ended June 11, 1954. The next session will begin Sept. 28, 1954 and end June 10, 1955. The dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine. 801 Northeast Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Okla. after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928 and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years of college work. The fees for residents of Oklahoma are \$-00; nonresidents \$500. The registration for 1953-1954 was 380 graduates 81. The last session began Sept. 14, 1953 and ended June 6, 1954. The next session for freshmen and sophomores will begin Sept. 13, 1954. The junior class will begin on Sept. 1, 1954. The senior session began June 21, 1954. All sessions end on June 5, 1955. The dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School. 3181 Southwest Sam Jackson Park Road, Zone 1.—Organized in 1887. The first class graduated in 1888 and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are \$456 a year for residents of Oregon and \$180 a year additional for nonresidents plus a breakage deposit of \$15 a year for the first two years. The registration for 1953-1954 was 267 graduates 56. The last session began Sept. 30, 1953 and ended June 18, 1954. The next session will begin Sept. 29, 1954 and will end June 11, 1955. The dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia. 235 North Fifteenth Street, Zone 2.—Formed by the successive union of several institutions. The earliest original charter was obtained in 1813. The name Hahnemann Medical College was taken by one of these institutions in 1867. The present name was assumed in 1885. The first class graduated in 1849. Coeducational since 1941. A minimum of three years of collegiate work in an approved college of arts and sciences is required for admission. Fees for 1954-1955 session respectively for the first, second, third, and fourth year classes are \$847, \$847, \$847 and \$877. The registration for 1953-1954 was 393 graduates 99. The last session began for all students Sept. 14, 1953 and ended for the first, second, and third year classes on June 12, 1954 and for the fourth year class on June 17, 1954. The next session for all classes will begin Sept. 13, 1954 and will end for the first, second and third year classes June 11, 1955 and for the fourth year class June 16, 1955. The dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia. 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate charter was granted without change of title since which time it has continued under the board of trustees. For the class entering in 1954, the minimum entrance requirements will be three years of college work. The tuition fee averages \$800 a year. The registration for 1953-1954 was 666 graduates 163. The last session began for all classes on Sept. 1, 1953. Classes ended for freshmen and sophomores on June 12, 1954 for juniors on June 5, 1954 and for seniors on June 18, 1954. Graduation was June 18, 1954. The next session will begin for all classes on Sept. 13, 1954 and will end for freshmen and sophomores on June 11, 1955 for juniors on June 4, 1955 and seniors on June 17, 1955. The dean is George Allen Bennett, M.D.

Temple University School of Medicine. 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average \$500 per academic year. The registration for 1953-1954 was 516 graduates 132. The last session began Sept. 1, 1953 and ended June 12, 1954 for freshmen, sophomores and juniors. The senior class began Sept. 1, 1953 and ended June 17, 1954. The current session began Sept. 7, 1954 and will end June 16, 1955. The vice president and dean is William N. Parkes, M.D.

University of Pennsylvania School of Medicine. Thirtieth and Pine Streets.—Organized in 1765. Classes were graduated in 1766 and in 27 subsequent years except 1772 and 1773 inclusive. The original title

was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work are required for admission. The tuition fee is \$850 with a deposit of \$15 a general fee including student health of \$70 and a matriculation fee of \$5. The registration for 1953-1954 was 502, graduates 127. The last session began Sept. 8, 1953, and ended June 12, 1954. The current session began Sept. 7, 1954, and will end June 11, 1955. The dean is John McK. Mitchell, M.D.

Woman's Medical College of Pennsylvania, 3300 Henry Avenue, Zone 29—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers three years of 36 weeks each and one year of 40 weeks. Total fees are \$960 yearly. The registration for 1953-1954 was 181, graduates 43. The last session began Aug. 10, 1953, for the fourth year, Sept. 10, 1953, for third year and Sept. 14, 1953, for first and second year. The current session began Aug. 2, 1954, for the fourth year, Sept. 9, 1954, for second and third year and will begin Sept. 13, 1954, for first year and end June 11, 1955. The dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street—Organized in 1886 as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. Entrance requirements are three years of collegiate work. The total fees are \$700 each year. The registration for 1953-1954 was 385, graduates 98. The last session began Sept. 14, 1953, and ended June 9, 1954. The next session will begin on Sept. 13, 1954, and will end June 15, 1955. The dean is William S. McEllroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of South Carolina, 16 Lucas Street, Zone 16—Organized 1823. The first class graduated in 1825. In 1832 a medical college bearing the title Medical College of the State of South Carolina was chartered and the two schools continued as separate institutions until they merged in 1838. Name changed by Act of General Assembly in February, 1952, to Medical College of South Carolina. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average \$432 each year for residents of South Carolina and \$1,532 for nonresidents of the state. The registration for 1953-1954 was 275, graduates 55. The last session began on Sept. 24, 1953, and ended June 3, 1954. The current session began on Sept. 9, 1954, and will end June 2, 1955. The dean is John T. Cuttino, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 847 Union Avenue, Zone 3—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Three years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science medical curriculum of the university. The fees are \$450 for residents and \$675 for nonresidents. The registration for 1953-1954 was 750, graduates 159. During the next academic year the quarters begin September, January, March, and July. The vice president and dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth)—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Three years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year \$630, second year \$620, third year \$610, fourth year \$625. The curriculum covers four academic years of 34 weeks each. In September, 1942, Meharry Medical College instituted the quarter system. The registration for 1953-1954 was 257, graduates 63. The last session began on Sept. 28, 1953, and ended on June 7, 1954. The next session begins Sept. 27, 1954, and will end on June 6, 1955. The dean is Daniel T. Rolfe, M.D.

Vanderbilt University School of Medicine, Twenty-first Avenue South at Edgemoor, Zone 5—The school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation students must be graduates of collegiate institutions of recognized standing or seniors in *absentia*, who will receive the bachelor's degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years, 3 of 9 months

each and one of 10 months. The fees average \$810 per academic year. The registration for 1953-1954 was 206, graduates 54. The last session began Sept. 28, 1953, and ended June 6, 1954. The next session will begin Sept. 27, 1954, and will end June 5, 1954. The dean is John B. Youmans, M.D.

TEXAS

Dallas

Southwestern Medical School of the University of Texas, 2211 Oak Lawn—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. Became a branch of the University of Texas Sept. 1, 1949. The medical school is operated on the regular program offering three terms of 12 weeks each per academic year. The tuition fees for residents average \$125 per year. The nonresident fee is \$375 per year. Three years of college work are required for admission. The registration for 1953-1954 was 394, graduates 98. The last session began Sept. 9, 1953, and ended June 7, 1954. The current session began Sept. 8, 1954, and will end June 10, 1954. The assistant dean and chairman of the executive committee is A. J. Gill, M.D.

Galveston

University of Texas School of Medicine, 900 Strand Street—Organized in 1890. The first class graduated in 1892. Coeducational since organization. Three years of collegiate training are required for admission. The fees average \$103 per academic year, including health fees for medical care and hospitalization. The registration for 1953-1954 was 599, graduates 132. The last session began on Sept. 15, 1953, for freshmen, Sept. 21, 1953, for sophomores, and July 6, 1953, for juniors and seniors. All classes ended June 5, 1954. The next freshman class will matriculate Sept. 14, 1954, and the sophomore and junior classes will matriculate on Sept. 20, 1954, the seniors matriculated July 6, 1954, all classes will end June 4, 1955. The executive director is Chauncey D. Leake, Ph.D.

Houston

Baylor University College of Medicine, Texas Medical Center—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are respectively \$790, \$780, \$780, \$805. The registration for 1953-1954 was 358, graduates 86. The last session began Sept. 14, 1953, and ended May 31, 1954. The next session will begin Sept. 13, 1954, and will end May 30, 1955. The dean is Stanley W. Olson, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine—Organized in 1905. Coeducational since organization. Four year curriculum established March 1943. Three years of collegiate work are required for admission. The next freshman class will be admitted in September 1954. All subsequent freshmen classes will begin in September of each year. Classes are scheduled during three academic quarters (12 weeks) each calendar year. Applications for admission (complete) must be submitted prior to October 31 preceding opening date. The fees average \$480 (resident), and \$830 (nonresident). The registration for 1953-1954 was 198, graduates 45. The next session for freshmen, sophomores, juniors and seniors will begin in September, 1954, and end in June, 1955. The dean is John Z. Bowers, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street College Park—Organized with complete course in 1822. Classes graduated in 1823 to 1836 inclusive when the school was suspended. It was reorganized in 1853 and classes were graduated in 1954 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages \$567 per session. Nonresidents are charged an additional \$433 each session. Registration for 1953-1954 was 189, graduates 43. The last session for freshmen sophomores, and juniors began Sept. 11, 1953, and ended for the freshmen and sophomores on June 13, 1954, for the juniors on Aug. 28, 1954. The last senior class began June 29, 1953, and graduated June 13, 1954. The current session for all classes began Sept. 10, 1954, and will end on June 12, 1955, for all except the juniors. The junior year ends on Aug. 27, 1955. The dean is George A. Wolf Jr., M.D.

VIRGINIA

Charlottesville

University of Virginia School of Medicine—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the tuition and other required fees are \$465 per academic year for nonresidents \$865. The registration for 1953-1954 was 292, graduates 70. The last session began Sept. 20, 1953, and ended June 14, 1954. The next session will begin Sept. 19, 1954, and end June 13, 1955. The dean is Thomas H. Hunter, M.D.

Richmond

Medical College of Virginia, Twelfth and Broad Streets—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was

merged Coeducational since 1918. Classes were graduated in 1838 and in all subsequent years. Three years of collegiate work as a minimum, are required for admission. Preference however is given to applicants with a baccalaureate degree. Fees average \$563 per academic year. Nonresidents are charged an additional \$325 each year. The registration for 1953-1954 was 372 graduates 100. The last session began Sept. 14 1953 for second, third and fourth year classes and ended June 1 1954. The last session for the first year class began Sept. 10 1953 and ended June 1 1954. The subsequent session began Sept. 9 1954 for the first year class and will begin Sept. 13 1954 for the second third and fourth year classes and will end May 31 1955. The dean is John B. Truslow M.D.

WASHINGTON

Seattle

University of Washington School of Medicine, Zone 5—Established by the legislature in 1945 and organized as one of the professional schools in the Division of Health Sciences of the University of Washington in 1946. The first class graduated in 1950. Coeducational. The minimum requirement for admission is three years of collegiate work. Tuition fees are \$390 each year for residents of Washington and Alaska and \$585 for nonresidents of these areas. Registration for 1953-1954 was 287 graduates 68. Classes are limited to 75. Primary consideration is given to residents of Washington and Alaska, although a certain number of out of state applicants are accepted each year with preference to qualified students from neighboring states territories, and provinces where no medical school exists. The last session began Sept. 21 1953 and ended June 12 1954. The next session will begin Sept. 29 1954 and will end June 11 1955. The dean is George N. Aagaard M.D.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue.—Organized 1907. Gave only the first two years of medical course until 1925, when the clinical years were added. Coeducational since organiza-

tion. The entrance requirement is three years of collegiate work. Fees for the first, second, and third years \$340 for the fourth year \$250 per academic year for residents. An additional fee of \$320 per year is charged nonresidents. Registration for 1953-1954 was 318 graduates 79. The last session for freshman sophomore, and junior students began Sept. 21 1953 and ended June 14 1954. The last senior class began June 29 1953 and ended June 18 1954. The next freshman, sophomore and junior classes will begin Sept. 20 1954 and will end June 14 1955. The senior class began June 28 1954 and will end June 17 1955. The dean is William S. Middleton M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street, Zone 3—Organized in December 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are \$850 per academic year. The registration for the 1953-1954 session was 391 graduates 95. The last session began Sept. 14 1953 and ended June 4 1954. The last senior class began June 8 1953 and ended June 5 1954. The next session for freshman, sophomore and junior students will begin Sept. 13 1954 and will end June 6 1955. The 1954-1955 session for seniors began on June 7 1954 and will end June 3 1955. The dean is John S. Hirschboeck, M.D.

PUERTO RICO

San Juan

University of Puerto Rico School of Medicine, Ponce de León Avenue.—Organized in 1949 the first class entered in August, 1950 and graduated June 1 1954. It evolved from the School of Tropical Medicine. Coeducational since organization. Three years of collegiate work are required for admission. Annual fees amount to \$539. The registration for 1953-1954 was 184 graduates 45. The last session began Aug. 17 1953 and ended May 21 1954. The current session began Aug. 16 1954 and will end May 20 1955. The dean is E. Harold Hunman M.D.

APPROVED MEDICAL SCHOOLS IN CANADA

ALBERTA

University of Alberta Faculty of Medicine Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. Three years of college work are required for admission. Tuition for first year is \$300 per session for second year \$450 per session and for third and fourth years \$500 per session. The registration for 1953-1954 was 236 graduates 61. The last session began Sept. 1 1953 and ended April 30 1954. The current session began Sept. 7 1954 and will end April 30 1955. The dean is John W. Scott, M.D.

BRITISH COLUMBIA

University of British Columbia Faculty of Medicine Vancouver.—Organized in 1949. Coeducational. First class graduated in 1954. Three years of arts required for matriculation. The regular medical course extends through four years and leads to the M.D. degree. The first two years of the course are taught almost entirely on the university campus; the third and fourth years are taught at the Vancouver General Hospital and other affiliated institutions including Shaughnessy Hospital St. Paul's Hospital Children's Hospital Grace Hospital the Provincial Mental Hospital and the Western Society for Rehabilitation. The fees are \$455 yearly for both residents and nonresidents. The registration for 1953-1954 was 233 graduates 54. The last session began Sept. 7 1953 and ended May 15 1954. The current session for all classes began on Sept. 8 1954 and will end May 14 1955. The dean is Myron M. Weaver M.D.

MANITOBA

University of Manitoba Faculty of Medicine Bannatyne Avenue Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886 and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include three years of college work in the faculty of arts and sciences of a recognized university. The course extends over four years of eight months each and a hospital internship. The fees average \$450 yearly. The registration for 1953-1954 was 267 graduates 58. The last session began Sept. 14 1953 and ended on May 22 1953. The next session will begin on Sept. 13 1954 and will end on May 21 1955. The dean is Lennox G. Bell M.D.

NOVA SCOTIA

Dalhousie University Faculty of Medicine University Avenue Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty separate from the Halifax Medical College in 1885. In 1911 in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts increasing with the medical class entering in 1946 to three years. The new ruling will thus apply to students starting their premedical

work in 1954. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average \$440 yearly: nonresidents \$250 additional fee. The last session for freshmen sophomores juniors and seniors began Sept. 8 1953 and for internes May 3 1953. All classes ended May 11 1954. The registration for 1953-1954 was 212 graduates 53. The present session for internes began May 3 1954 and for the first four years Sept. 7 1954 and will end May 17 1955. The dean is C. B. Stewart, M.B.

ONTARIO

Queen's University Faculty of Medicine Kingston.—Organized in 1854. First class graduated in 1855 and a class graduated each subsequent year. The course consists of six sessions of 32 teaching weeks; the sixth session being devoted entirely to clinical work in the hospitals affiliated with the university. The latter is not considered an internship. Fees for each of six years amount to \$469.80. The degrees awarded are M.D., C.M. Freshmen will be admitted annually. Registration for 1953-1954 was 359 graduates 53. The last session began Sept. 14 1953 and ended May 12 1954. The next session will begin Sept. 20 1954 and will end May 7 1955. The last convocation was held June 5 1954. The dean is G. Harold Ettinger M.D.

University of Ottawa Faculty of Medicine Ottawa.—Organized in September 1945. The degree of M.D. is conferred after one year pre-medical studies four years medicine and one year of internship. The minimum academic requirements for admission to the premedical year are the Ontario grade 13 honour matriculation or equivalent certificates. Students who have obtained their bachelor degree in arts or in science and who have completed the required courses in biology chemistry and physics may be admitted to the first year of medicine. The registration for 1953-1954 in the medical and premedical years was 248 graduates 47. The current session for the premedical year began on Sept. 9 1954 and for first, second third and fourth medical years on Sept. 7 1954. Internship is from May 1 to April 30. The session for the premedical year will end in May 1955 for first second, and third medical years in June 1955 and the fourth medical year in April 1955. Students graduate in the first week of June. The dean is A. L. Richard M.D.

University of Western Ontario Faculty of Medicine, 3-6 South Street London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honor college years of nine months each and four years of nine months each in the Faculty of Medicine. The total fees for the last four years are \$550 a year. The registration for 1953-1954 was 237 graduates 61. The last session began Sept. 14 1953 and ended May 25 1954. The next session will begin Sept. 13 1954 and end May 25 1955. The dean is J. B. Collip M.D.

University of Toronto Faculty of Medicine University Grounds, Zone 5 Toronto.—Founded in 1827 as the Medical Faculty of King's College. Discontinued in 1853. Reestablished in 1857. In 1902 Victoria University

Medical Department and in 1903 the Medical Faculty of Trinity University became affiliated Coeducational since 1903. The degree of MD is conferred after four years in the study of medicine. Students are admitted to the medical course following grade 13 examinations of the province of Ontario and after two years in the study of premedical requisites in the University of Toronto. A limited number of students, who have a degree in arts from a recognized university and who have covered the necessary work in the humanities and sciences may be admitted to the first medical year. The BSc (Med) degree may be conferred for special work or investigation is a graduate degree or under certain circumstances for an extra year's work as an undergraduate. The registration for 1953-1954 in the medical and premedical years was 851, graduates 166. The next session for first and second premedical years will begin on Sept 22, 1954 and for first second third and fourth medical years on Sept 20, 1954. The session for premedical years will end on April 30, 1955 and for medical years on May 14, 1955. Students will graduate annually in June. The dean is J A MacFarlane MB.

QUEBEC

McGill University Faculty of Medicine, 3640 University Street Montreal—Founded in 1823 as Montreal Medical Institution, became the Medical Faculty of McGill University in 1829. First class graduated under the university auspices in 1833. No session between 1836-1839 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College Coeducational since 1917. Three years of collegiate work are required for admission. The total fees for each of the four medical years are \$593. The registration for 1953-1954 was 440 graduates 110. The last session began Sept 9, 1953, and ended June 5, 1954 for the first

three classes and May 1, 1954 for the senior class. The current session began Sept 8, 1954 and will end June 4, 1955 for the first three classes and April 30, 1954, for the seniors. The dean is G Lyman Duff, MD.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891 by Act of Parliament, was merged with the Faculty of Medicine of Laval University at Montreal (organized in 1878). Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year Coeducational since 1925. The requirements for admission are B A degree or its equivalent, with a supplementary year in the Faculty of Pure Science or an entrance examination on the premedical subjects. An internship is required for graduation. The fees are \$390 yearly for residents, and \$465 yearly for nonresidents. The registration for 1953-1954 was 423, graduates 99. The last session began Sept 11, 1953, and ended May 28, 1954. The next session will begin Sept 14, 1954, and will end May 27, 1955. The dean is Wilbrod Bonn MD.

Laval University Faculty of Medicine, Quebec—The Quebec School of Medicine organized in 1848, became in 1852 the Laval University Faculty of Medicine, first class graduated in 1855, and a class graduated each subsequent year. The premedical requirement is a B A degree. The medical course is six years in length including a one year internship in affiliated teaching hospitals. The first year (premedical) may be avoided by a special examination. The fees for each of the medical years average \$400 for residents of Canada. Nonresidents are charged an extra fee of \$200 each year. The registration for 1953-1954 was 599 graduates 134. The last session began Sept 9, 1953 and ended June 1, 1954. The current session began Sept 8, 1954 and will end June 1, 1955. The dean is Charles Vézina, MD.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine—Organized in 1903 Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work. Fees average \$410.50 annually. There is a nonresident additional fee of \$200. The school operates on an accelerated program by accepting two freshman classes each session. Registration for 1953-1954 was 113. Approximately 28 students will register Aug 2, 1954. The last session for freshmen began July 13, 1953, and ended May 1, 1954. An additional freshman class was admitted Feb 1, 1954, and will end Oct 16, 1954. The sophomore session began May 24, 1954 and will end Jan 29, 1955. An additional sophomore session will begin Nov 8, 1954, and will end July 16, 1955. The dean is David S Pankratz MD.

MISSOURI

Columbia

University of Missouri School of Medicine—Organized at St Louis in 1845, was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirement is three years of collegiate work. The B S degree in medicine is conferred at the end of the second year. Total fees for the first year are \$284 for the second year \$270. The registration for 1953-1954 was 85. The last session began Sept 15, 1953, and ended June 12, 1954. The next session will begin Sept 13, 1954, and will end June 8, 1955. The dean is Roscoe L Pullen MD.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School—Organized by Dr Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A B degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year. The tuition is \$800 for each year. The registration for 1953-1954 was 46. The last session began on Sept 20, 1953 and ended June 13, 1954. The next session will begin Sept 19, 1954, and will end June 12, 1955. The dean is Rolf C Syvertsen, MD.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B S degree in combined arts medical course is conferred at the end of the second year. The fees are \$138 each year for resident students and \$223 for nonresidents. The registration for 1953-1954

was 70. The last session began Sept 18, 1953 and ended June 5, 1954. The current session began Sept 1, 1954, and will end May 26, 1955. The dean is Theodore H Harwood, MD.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A B degree, the B S degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine course) A B degree. The tuition is \$270 for first year residents and \$360 for second year residents. \$480 for first year nonresidents and \$570 for second year nonresidents. Registration for 1953-1954 was 63. The last session began Sept 1, 1953 and ended June 7, 1954. The current session for first and second year students commenced Aug 30, 1954 and will end June 6, 1955. Following the didactic work in the second year the sophomores are assigned to a general practitioner to serve on a one month preceptorship program. The dean is W L Hard, PhD.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine—Organized in 1912. Gives the first two years of the medical course but agreement has been made for the transfer of 25 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B S degree is conferred at the end of the second year. Fees for residents of the state are respectively \$258 and \$268, nonresidents \$442 additional each year. The registration for 1953-1954 was 61. The last session began Sept 14, 1953, and ended May 31, 1954. The next session will begin Sept 13, 1954 and will end May 30, 1955. The dean is Edward J Van Lier, MD.

APPROVED SCHOOL OF THE BASIC MEDICAL SCIENCES IN CANADA

SASKATCHEWAN

University of Saskatchewan College of Medicine, Saskatoon—Organized in 1926. Coeducational. Will offer a full medical course. First graduates 1957. Two years of university work after senior matriculation is required for admission. The B A degree is conferred at the end of the second year. The fees are \$390.50. The registration for 1953-1954 was 65. The last session began Sept 23, and ended June 19. The next session will begin Sept 22, 1954, and will end June 18, 1955. The dean is J Wendell Macleod, MD.

THE JOURNAL

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PROGRESS IN MEDICAL EDUCATION

This issue of THE JOURNAL includes the 54th Annual Report on Medical Education in the United States and Canada prepared by the Council on Medical Education and Hospitals of the American Medical Association and developed to inform the profession and the public of the current status, development, and trends in this important area of education. Evaluation of the annual reports of activities and statistics, as submitted by the medical schools, indicates that the past year has been one of steady progress and that the period immediately ahead holds promise of continuous growth and advance in the field of medical education and in the interest of the general public welfare.

The past year has witnessed completion of the basic organization of faculty and four year curriculums with the graduation of their first class of physicians in three medical schools—the University of North Carolina, the University of Puerto Rico, and the University of British Columbia. Thus there are now 74 approved four year medical schools, 6 schools of basic medical science in the United States, and 11 approved four year medical schools and one school of basic medical science in Canada. Currently, eight other new four year schools of medicine are in process of actual development, and two other developmental programs may be added during the course of the next year. The University of California at Los Angeles will graduate its first class in 1955, Miami in 1956, and, if current developments proceed on schedule, Mississippi and Missouri in 1957. The University of Florida, West Virginia, Albert Einstein, and Seton Hall medical schools will follow closely. The University of Kentucky will seek funds from the next legislature to establish a four year school, and the North Dakota legislature has passed legislation that will extend their current basic medical science school into a full four year medical school program. Medical school enrollments have steadily increased over the past 20 years as existing schools have augmented their faculties and facilities and new schools have been developed. This, together with the currently developing programs and those now under advisement, assures the continued steady increase of undergraduate medical students and larger numbers of graduates annually for many years ahead. Proportionately, the rise in the number of medical graduates should, therefore, be relatively more rapid than general population increase in the course of the next 6 to 10 years.

In line with the increased enrollments and larger graduating classes is the fact that attrition rates in medical schools are much lower than was the case some years ago. This is a direct reflection of the interest and care and improved student counseling and advisement that medical schools have exercised in the selection of students in an effort to reduce the wastage that earlier accompanied less careful evaluation of the potentialities of entering students.

The rapid advances in knowledge during recent years have so changed diagnostic techniques and therapeutic approaches that schools have been constantly challenged to reevaluate their teaching programs and to revise curriculums and teaching methods in keeping with these dynamic developments. Intellectual ferment prevades the field of medical education, and interesting experimental programs devised to improve undergraduate, graduate, and postgraduate opportunities in this field are being conducted on a wide scale. The intercommunication so effectively initiated through the conferences and institutes in such fields as psychiatry, public health, and preventive medicine, and the annual teaching institutes started by the Association of American Medical Colleges in 1953 have been potent factors in accelerating curriculum reevaluation and stimulating experiments in medical education.

New emphasis on the patient as a person, with the focus on man in his environment, has become the nucleus of many of these new experimental approaches. This is reflected in the efforts to reduce departmental barriers and improve integration and correlation of many areas of teaching too frequently rigidly departmentalized in the past through reduction of didactic teaching, strengthening of clinical clerkships, better organization and utilization of the potentialities of outpatient clinic teaching, home study and hospital extension programs and preceptorships, and over-all improvement in supervision of such programs.

There has also been improvement in medical school financing. This has been especially notable in the field of outside support for research and certain special areas of teaching. In their efforts to improve opportunities in medical education, to adequately support existing faculty personnel, and to introduce new departments, sections, or divisions in keeping with advancing knowledge, medical schools will face a continuing need for more adequate financing as they endeavor to serve the public in the education of the physician of tomorrow and continue to search for new knowledge essential to further improvement in medical care. This is a challenge that the public must understand and share so as to assure the continuation of the high standards of professional care and medical education that characterize American medicine.

The American public, the medical profession, and the medical schools have every right to take genuine pride in the tremendous advances that have been made in medical education during the course of the past half century. The American public should be deeply conscious of the high quality of medical care to which it is privileged. This high quality of medical care can be available only through the education of medical personnel fully informed and prepared to meet the constant challenges that confront them in this rapidly changing and dynamic

era in which they live and work today. As Whitehead¹ has indicated, in education imagination is a contagious disease. It cannot be measured by the yard or weighed by the pound and then delivered to the students by members of the faculty. It can be communicated only by a faculty whose members themselves wear their learning with imagination. Thus, in maintaining the high objectives of the best possible medical care, medical education is constantly confronted with the need for imaginative planning that can guarantee for the period ahead advances of the same order of magnitude that have been accomplished during the first half of the 20th century.

OBJECTIVES IN OUTPATIENT TEACHING

During recent years the new diagnostic techniques and new therapeutic agents and procedures have made it possible to treat many patients in outpatient departments who, prior to these developments, occupied hospital ward beds. With increasing numbers of ambulatory patients cared for in outpatient clinics, this aspect of medical care assumes ever greater importance. Numerous medical educators have long felt that there was room for improvement in the care of such ambulatory patients and have recognized the favorable position of the outpatient clinic as a learning experience for the medical student.

In the past many teachers in the clinical fields have preferred teaching in the hospital wards because of their superior organization, better continuity of immediate "follow-through" teaching, and what appeared to be a greater educational challenge. The rapid increase in the number and importance of the various medical specialties over the past half century has resulted in outpatient teaching schedules in which the student spent a few weeks in medicine, a similar period in surgery, then a shorter period in pediatrics and obstetrics, after which he passed in rapid succession through such specialties as neurology, psychiatry, dermatology, orthopedics, urology, ophthalmology, and otolaryngology. This kaleidoscopic experience lacked continuity of patient care throughout any given illness or complaint and consequently tended to fail in many instances to develop in the student a sense of responsibility for patients as persons.

At the University of Oklahoma, the University of Pennsylvania, Boston University, Cornell, and other institutions, student assignments to outpatient clinic experiences are being radically modified to permit more adequate continuity of "follow-through" between students and their patients. In one of these programs, although the student works day-by-day on a given service such as medicine or surgery, this outpatient assignment is merely for the purpose of maintaining a proper balance in his experience and in the assignment of new patients. Once the initial contact has been made between the patient and his student physician, the latter follows the patient throughout his full cycle of illness regardless of what special diagnostic procedures or treatment may be required. In another institution the traditional "block system" of fourth year outpatient assignment has been

abolished and replaced by an assignment concurrently to all outpatient departments. This program has also allowed the continuity of patient-student relationship throughout the entire outpatient experience.

Wherever this type of program has been carefully planned and adequately supervised, both faculty and students have been enthusiastic over the results. After a single year of experience one faculty group indicated that they are firmly convinced that the concept is basically sound from both medical care and educational aspects. There is no question that the potentialities of outpatient teaching have been greatly enhanced in recent years. On the other hand, these opportunities can be only as good as the planning, personnel, and supervision that underlie this development and wherever initiated deserve the over-all study and implementation that will make it possible to realize their maximum potentialities in medical care and medical education.

PREPARATION FOR GENERAL PRACTICE

There has long been a widespread recognition that completion of medical school work does not in itself constitute sufficient preparation for the practice of medicine. Perhaps the most noteworthy evidence of this fact is illustrated by the unanimous action of the graduates of 1952-1953, none of whom went into practice without further formal training.

Although in the past it has been customary for physicians to enter general practice after one year of internship, there is a growing realization that this no longer represents adequate preparation. Medical students interested in devoting their lives to the general practice of medicine and medical school faculties have both expressed this realization. Many physicians now in general practice concur in this observation, and the educational requirements necessary for continued membership in the American Academy of General Practice are at least an indirect acknowledgment of this need by an organized group of thoughtful participants in this field of medical practice.

In previous years, many medical schools stated as the major objective of their undergraduate teaching programs the preparation of students for the general practice of medicine. Currently, however, most medical faculties embrace as the major objective of undergraduate medical education the provision of a solid framework of fundamental principles applicable to all areas of medicine. This implies that the student must build on this framework through further training after graduation the additional appurtenances necessary for sound practice in whatever field he chooses for his career.

Career decisions are made, for the most part, during the medical school or internship period. An intelligent selection of any career is difficult without some knowledge of what it constitutes. Until recently medical students and most interns came in contact with only the medical specialist. Now, through preceptorship programs, general practice outpatient teaching clinics, and home care programs, more and more students are afforded an opportunity for intimate association with physicians in general practice. Armed with a better understanding of the specialist and the physicians in general practice through

¹ Whitehead, A. N. *The Aims of Education, and Other Essays*, New York, the Macmillan Company, 1929.

association with both groups and their patients, a wiser choice of a future career should be possible

Inculcation of sound principles and attitudes is indeed a major task to accomplish during four years in medical school. Most would agree that, if this is accomplished, the medical schools have rendered a great service, however, the total educational needs of the students imply the requirement of a further educational program to provide opportunity for more detailed knowledge. Medical schools have long accepted this necessary graduate teaching area in the medical specialties as part of their responsibility but have not felt an equal responsibility in the field of general practice.

The educational demands of students preparing for the special fields of medicine have undoubtedly contributed to the willingness of the medical schools to supply this demand. It is heartening to note that, as students interested in general medical practice have evinced a desire for training beyond the internship, there has also developed in medical schools a desire to meet this new demand. Several programs for graduate training in general practice have already been established by medical school faculties in their associated hospitals. In general, it is felt that these programs are successful, although it is doubtful if any of the participating institutions feel that all major problems have been resolved.

The demands of students in the specialty fields of medicine ultimately contributed to the establishment of specified training programs and standards of practice in those fields. There are many difficult obstacles to the similar development of specified graduate training programs and standards of practice in the field of general medicine. Much could be said in favor of such a development, and recent occurrences could conceivably be logical precursors to such a step.

TEACHING LEGAL MEDICINE IN MEDICAL SCHOOLS

Because of the fact that in the practice of medicine no physician can avoid contact with the law, it is important that medical students have basic instruction in regard to their legal duties to patients, their communities, and their government by the time they receive their professional degrees. Furthermore, they should also possess sound basic knowledge of the pathology of trauma.

On the basis of an analysis made in 1952¹ of what is being taught in the field of legal medicine, a Committee on Medicolegal Problems of the American Medical Association obtained information suggesting the need for additional emphasis on this field in some institutions. At that time 15 schools had departments of legal medicine and 7 schools offered elective courses only. Of the remaining institutions, 6 schools offered electives in addition to the required basic course in legal medicine, 5 offered comprehensive graduate courses, 16 presented undergraduate instruction that on the basis of current standards appeared to be satisfactory, and 23 presented definitive or organized instruction in medical jurisprudence alone. Twenty of the schools described additional courses other than in medical jurisprudence that appeared to be insufficient from the point of view of adequate instruction in legal medicine.

Rapid advances in knowledge and its application to medical care have presented medical educators with increasingly difficult problems in curriculum planning. Every curriculum committee is confronted with the question of what can be logically modified or deleted as well as what might be added to achieve a program to meet current needs. Reasonable indoctrination in the fundamentals of legal medicine would appear to be essential for all medical students. The committee referred to has prepared a suggested basic course of 20 hours for fourth year students that should amply cover the need if carefully planned and adequately taught. The program merits serious thought on the part of curriculum committees considering this area of their undergraduate programs.

DEVELOPING PROFESSIONAL ETHICS

There is no doubt but that in this difficult period of world turmoil, with its political and social upheaval, there is need for reemphasis on moral and ethical values in all areas of human endeavor. It is comparatively easy to outline the basic principles of ethics in the profession of medicine or, for that matter, in any field of activity where there is general agreement on the fundamentals of correct conduct, however, the development of proper ethical concepts and conduct within the individual demands far more than lectures or the mere reading or discussion of principles. Concepts of right and wrong are developed from early childhood on through preprofessional training. Nevertheless, students learn the application of the ethical principles of their profession from the precept and example of their teachers and practitioners of their profession with whom they come in contact during the formative years of training and early professional life.

One of the great modern philosophers¹ tells us that the early Greeks believed that there were two principles of conduct. One of these was represented by the laws of the state forbidding an individual to do certain things and ordering him to do others. Aside from these laws, they believed in what was considered to be an even more important principle of conduct. This involved the individual as an agent free to do as he chose. This important principle of conduct, however, had a master, or what might be roughly translated as a conscience, a sense of things that are not done, an understanding of the things a man feels inconsistent with his self-respect or his honor and consequently will not engage in, although there is no one to prevent him from doing so. Thus, aside from the learning of ethics through various educational mediums and personal contacts, there is also a question of character development guided by this second ancient principle of conduct. No more searching question can be asked about a people or about a man, nothing throws more light on character, than observing the role of this great second principle, or conscience, in regard to what it allows to be done and what it forbids. Education in all areas of human endeavor today can well afford to plan the inclusion of greater emphasis on moral and ethical values. It is no idle Ivory Tower fantasy to include emphasis on them in the curriculum.

¹ Regan, L. J., and others. A Suggested Course in Legal Medicine for Medical Schools. *J. A. M. A.* 150:16 (Oct. 18) 1952.

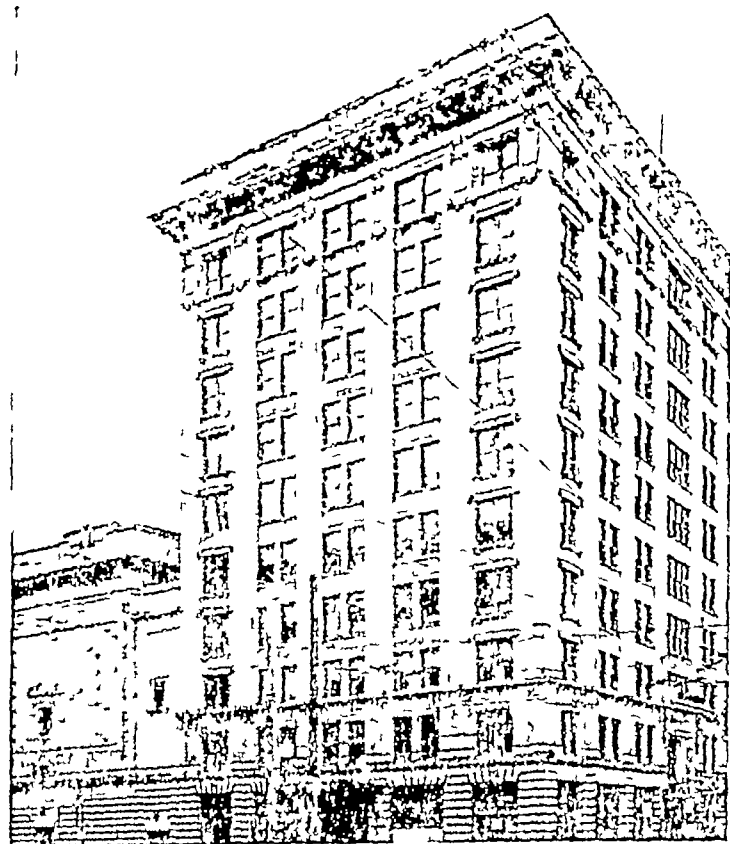
¹ Livingsone, Sir R. W. *Education and the Spirit of the Age*. London: Oxford University Press 1952.

ORGANIZATION SECTION

OHIO STATE MEDICAL ASSOCIATION

To permit readers of THE JOURNAL to become better acquainted with the activities of state medical associations, articles describing them will appear from time to time in these pages—Ed

According to the medical archives of Ohio, on May 14, 1846 "a number of medical gentlemen," 25 in all assembled at the Neil House in Columbus, adopted a constitution, and organized the Ohio State Medical Society, now the Ohio State Medical Association. In 1846, the situation in Ohio with respect to medicine was anything but bright and hopeful. The state was overrun with quacks, charlatans, and poorly prepared physicians. Attempts to control this situation during the previous decade had failed. Confronted with this crisis, the group of 25 physicians, holding degrees from recognized medical schools of the time, met to form an organization for fostering legislation to safeguard the public against knavery and ignorance and to initiate



The Hartman Theater Building in Columbus, in which the Ohio State Medical Association has its headquarters

activities to elevate the standards of the profession in Ohio. Before 1846 there had been no real medical organization in Ohio. A legislative enactment in 1811 created five medical districts, with local boards of censors, to license physicians to practice. The law was repealed in 1812 and a substitute enacted, increasing the districts to seven and creating a meaningless state medical society. Amended many times, the act was finally repealed in 1833. It was not until 1868 that the state again took steps to regulate the healing arts by law. The law of 1868 was basically weak. In 1896, the state enacted an adequate examining and licensing law. That law carried many of the basic provisions found in the present Ohio Medical Practice Act. The society, officially chartered by the state in 1848, became on May 6, 1904, the Ohio State Medical Association, when it was incorporated as a nonprofit corporation under state law.

Much of the time of the society during its infancy was devoted to studying the needs of the state for facilities for institutional care. Frequently the members met in Columbus when the legislature was in session. Often they adjourned to the

State House where leading physicians, including Daniel Drake and William Aul, would address the combined houses of the assembly on health and medical matters. Until 1902, the state society was composed of a mixture of county medical societies and district societies. That year the constitution was changed to conform with that of the American Medical Association, to read "Component societies shall consist of those county medical societies which hold charters from this association." Thus ended the district society as a basis of local organization. However, later the word "district" returned to use as a basis for membership on the Council, the interim governing body of the Ohio State Medical Association.

The Ohio State Medical Journal, the first issue of which appeared in July, 1905, was published under the supervision of a publications committee until 1936, when the present editor, Dr. Jonathan Forman, was appointed. Under Dr. Forman's guidance the journal has emphasized organization activities, published clinical papers of practical value, kept members informed of current legislative activities and economic-social developments affecting medicine, and devoted considerable attention to medical history. The position of news editor and managing editor for the journal was established in 1913. George V. Sheridan, who had served as a legislative representative of the association, was appointed and served under Dr. J. H. J. Upham, then chairman of the publications committee, who later became president of the state association and President of the A. M. A.

On Oct. 25, 1915, Mr. Sheridan was named to the newly created position of executive secretary, and a headquarters office was established in Columbus, where now the executive offices occupy the major part of the 10th floor of the Hartman Theater Building. Here are employed the executive secretary, Charles S. Nelson, George H. Saville, the assistant executive secretary, who also holds the position of director of public relations, an assistant director of public relations, who serves also as secretary of the rural health and the school health committees, an assistant managing editor and assistant business manager, a membership secretary, the editor of the journal (part time), and a stenographic and clerical staff of 10. In addition to the monthly journal, the association publishes a monthly newsletter known as *OSMAgram*. Through its department of public relations, the association provides speakers and exhibits for lay gatherings, distributes specially prepared literature to the public, furnishes articles and editorial suggestions to the press, cooperates with radio and television stations on medical and health programs, and supplies professional advice and guidance to official and voluntary agencies and organizations participating in medical and health activities. It maintains a bureau that supplies speakers for county and district society meetings and for meetings of civic groups and an active Physicians' Placement Service to assist areas needing physicians and to help physicians secure a location in Ohio. The committee on rural health, which administers a rural medical scholarship plan to interest rural young people in the practice of medicine, presents each year a lecture series on the general practice of medicine in small areas before the senior class at the Ohio State University College of Medicine in Columbus. The association's committee on school health has adopted policies with regard to physician participation in school health. It has published guides for school emergency service and cooperates in projects to intensify teamwork among physicians, educators, and health departments in the local community for better school health. In a "Guidepost to Services," distributed to all members, the association describes many personalized and special services for members in the field of workmen's compensation, medical care for veterans and for the aged, tax matters, legal opinions on medical and health subjects, matters relating to narcotics, reference material, data on physicians, hospitals, institutions, and welfare agencies, placement service, welfare programs, problems in ethics or professional relations, and the medical phases of suits for alleged malpractice.

The association has grown from its original membership of 25 to more than 8,000. Each of the 88 counties of the state has a chartered county medical society. The officers of the state medical association are Dr Merrill D Prugh, Dayton, president, Dr David W Heusinkveld, Cincinnati, president-elect, Dr Richard L Meiling, Columbus, treasurer.

COUNCIL ON RURAL HEALTH

This is one of a series of brief statements explaining the work of various departments of the American Medical Association—Ed

The Council on Rural Health was organized in 1945 when Mrs Charles W Sewell of the American Farm Bureau Federation interested Dr F S Crockett in the problem of the shortage of physicians in rural areas. Dr Crockett presented the problem to the American Medical Association and a committee was formed. It became a council in October, 1951. Though organized primarily to try to interest more physicians in rural practice, the larger purpose of the Council has come to be consideration of all problems of rural health in America. The Council furnishes guidance and materials to 45 state society rural health committees on ways and means for improving rural health. It sponsors an annual national conference on the subject, which serves both to inspire and educate the attending physicians and agricultural leaders. When it first decided to sponsor a national Conference on Rural Health, the Council members felt that they should contact leaders of farm organizations to determine what kind of program they wanted. Accordingly, an advisory committee was set up. On it were representatives of the Grange, the American Farm Bureau Federation, the Milk Producers Federation, and the Extension Services of the Land Grant Colleges. Its recommendations proved so valuable that the advisory committee became a permanent institution. It has continued to assist the A M A, not only with its succeeding conferences but with all aspects of its rural health programs. Today the committee is composed of 11 representatives from farm groups and the rural press.

The Council does not operate health programs. It believes in helping communities help themselves. It attempts, therefore, to activate communities, to provide them with information on how to achieve their aims and to coordinate the activities of farm organizations and physicians so that they work together as a rural health improvement team.

Early in 1952 a field director was employed by the Council on a permanent basis to gain firsthand information on the soundness and effectiveness of its program, to point out what needs to be done in each state and suggest solutions to problems. The program for improving rural health promoted by the Council stresses state and public health services, the Hill Burton Hospital Construction Act, rural scholarships, agricultural school extension services, parent-teacher associations, voluntary health agencies, voluntary prepaid medical and hospital care plans, indigent medical care plans, state and county health councils, health education programs and the encouragement of self-help programs. Through development of health councils and effective programs for improving rural health, the Council renders its most valuable service. The national conference has increased steadily in size and now is attended by about 600 representatives of the medical profession, voluntary health groups, farm organizations, state rural health committees, educators, and others.

CONFERENCE ON MENTAL HEALTH

The American Medical Association Committee on Mental Health will sponsor a meeting for mental health representatives of state medical associations at headquarters in Chicago, Sept 17-18, to discuss methods of gaining a more effective integration of techniques of psychiatry with general medical practice and the mental health programs by which constituent medical associations can achieve this objective. It is planned that each of the state medical associations will be represented by an official of

their present committee on mental health and at least one or more others of their leaders who are experienced in activities and policies of their respective organizations. The agenda for the meeting includes a welcoming address by Dr Elmer Hess, Erie, Pa., President-Elect of the A M A to be followed by a statement of purposes by Dr Leo H Barteimeier, Detroit, Chairman A M A Committee on Mental Health. Mental health programs of the state medical associations of Virginia, Texas and Connecticut will be presented by their respective committee chairmen, Drs David C Wilson, Charlottesville, Va., Hamilton F Ford, Galveston, Texas, and Clifford D Moore, Stanford, Conn., each presentation being followed by open discussion by all the delegates. Dr Winfred Overholser, superintendent of Saint Elizabeths Hospital, Washington, D C, will be the guest speaker at a dinner meeting (courtesy of the Association) Friday evening at the Drake Hotel.

The program Saturday morning will include presentations by Dr Walter E Barton, Boston, chairman of the American Psychiatric Association's ad hoc committee for liaison with the American Medical Association, Dr Marvin A Block, Buffalo, chairman of the A M A Subcommittee on Alcoholism, Mr Sidney Spector, director, Inter-State Clearing House on Mental Health of the Council of State Governments, Mrs George Turner, President of the Woman's Auxiliary to the A M A, and Dr David Price, assistant surgeon general of the U S P H S, representing the National Institute of Mental Health, Bethesda, Md.

NEW RADIO SERIES ON MEDICINE

Five more platters for radio broadcasting in the "Help Yourself to Health Series" are ready for shipment to local medical societies by the A M A Bureau of Health Education. The five 15 minute shows complete the series of 13 that were produced by the Rocky Mountain Radio Council and based on presentations made at A M A Rural Health Conferences. The five new recordings are entitled "Rural Community Receives a New Doctor," "A New Doctor in a Rural Community," "Success of a Health Council Survey," "How to Build a Hospital," and "Nursing At the same time, five other new recordings, completing the "Panorama of Medicine" series, also are ready for shipment to local medical societies by the A M A Bureau of Health Education. These 15-minute panel discussion programs, organized by Marshall-Heseter Productions, New York, originally were broadcast from station KCBS in San Francisco during the A M A session in June.

QUARTERLY CUMULATIVE INDEX MEDICUS

Volume 52 of the Quarterly Cumulative Index Medicus, covering literature for the second half of 1952, has been mailed to subscribers and is now available for purchase from the Order Department of the American Medical Association. Volume 45 (January-June, 1949), which has been held as a backlog for several years, is now being reproduced, and this issue is scheduled to appear next. Editing of cards for volume 53 (January-June, 1953) will begin about the first of October.

INVITATION TO ANNUAL CONFERENCE IN JAMAICA

The Jamaica branch of the British Medical Association has extended a cordial invitation to members of the American Medical Association to attend its annual conference to be held in Kingston, Dec 3-4, immediately after the Clinical Meeting of the A M A in Miami, Fla., Nov 29-Dec 2. The Jamaica branch has been in existence since 1877 and represents more than 300 doctors in that country. A special session for Saturday morning would be arranged at which the Jamaica branch would be pleased to have two, three or four members of the A M A speak on subjects to be arranged. A reception and dance would be held in the evening at which the guests would be received by the Governor of Jamaica. Kingston is within three hours by air from Miami.

MEDICAL NEWS

CALIFORNIA

Director Needed for Cardiorespiratory Laboratory—The San Diego Heart Association will sponsor a director of the cardiorespiratory laboratory at the new Sharp Memorial Hospital. Immediate applications will be considered. The laboratory, which will include facilities for electrocardiography, angiocardiology, fluoroscopy, cardiac catheterization, and pulmonary function studies and will carry on all the cardiopulmonary diagnostic work for the hospital, will be completely equipped at an outlay of about \$45,000. The salary of the director is open, as is the duration of the contract. Possibilities are now being explored for affiliation with a medical school. Interested physicians should write to the Heart Center Committee, San Diego Heart Association, 1651 Fourth Ave., San Diego 1.

COLORADO

State Medical Meeting—The Colorado State Medical Society will hold its 84th annual session at the Broadmoor Hotel, Colorado Springs, Sept 21 to 24, under the presidency of Dr. Claude D. Bonham, Denver. Presentations by out-of-state speakers include:

Recognition and Management of Chronic and Relaxing Pancreatitis
Surgical Management of Cholelithiasis and Its Sequelae Kenneth W. Warren, Boston

Difficulty in Swallowing Constipation and Its Management Franz J. Ingelfinger, Boston

Endocrinology in Children Jaundice in the Newborn, Barton Childs, Baltimore

Experiences with a Vitallium Intramedullary Artificial Hip Common Difficult Fractures Frederick R. Thompson, New York

Visceral Pain Mechanism Evaluation of Treatment in Disease, Stewart G. Wolf, Oklahoma City

Thrombophlebitis Relation of Smoking to Lung Carcinogenesis, Alton Ochsner, New Orleans

Thursday at 8:45 a.m. a motion picture, "The Etiology of Pollenosis," by Dr. D. Eugene Cowen, Denver, will be shown. The Thursday afternoon program will begin at 1:30 instead of 2 p.m., as previously announced, to permit viewing of the television symposium on hypertension (3 to 4 p.m.), which will be transmitted through a national closed circuit over the Columbia Broadcasting System by the American College of Physicians (THE JOURNAL, Aug 28, page 1591). Because of the state medical meeting, Colorado Springs will be used as the receiving station, although original plans were to send the telecast to Denver. The annual banquet Thursday at 7:30 p.m. will be addressed by Dr. W. W. Bauer, Chicago, Director, A.M.A. Bureau of Health Education, whose topic will be "Patients Are Particular People." At 9:30 p.m. there will be dancing in the Hawaiian Village. The woman's auxiliary will meet simultaneously with the state association. Its Friday morning session will be addressed by Dr. Henry C. Grabow, Canon City, whose topic will be "Where Do You Fit?"

DISTRICT OF COLUMBIA

Medical Election—Newly elected officers of the Medical Society of the District of Columbia include Dr. William Ross Morris, president-elect, Dr. Paul A. Wilner, first vice-president, and Dr. Margaret M. Nicholson, second vice-president. Dr. Preston A. McLendon serves as president.

Smithsonian Exhibit of Electrocardiography—During the World Congress of Cardiology in Washington, D.C., Sept 12 to 18, the Smithsonian Institution will inaugurate a permanent exhibit on the evolution of the electrocardiograph. The exhibit, containing an electrocardiograph enclosed in plexiglass instead of metal so that all controls and components can be viewed from any angle with the aid of a mirror back-drop, shows diagrammatically how an electrocardiograph is used on a patient.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

FLORIDA

Society News—At a recent meeting of the Miami Pediatric Society, Dr. Meyer B. Marks, Miami Beach, was elected president and Dr. Martiele Turner, Coral Gables, secretary-treasurer. The society gave a testimonial dinner on June 11 to Dr. William Watson McKibben, 80 years old, who has been in continuous pediatric practice in Dade County since 1923.

Obstetric Seminar—The Tri-State Obstetric Seminar will be held Sept 13 to 15 at the Sheraton Beach Hotel, Daytona Beach, under the sponsorship of the maternal and child health divisions of Florida, Georgia, and South Carolina and the Florida Medical Association. The speakers will include the following physicians: R. Gordon Douglas, New York; F. Bayard Carter, Durham, N.C.; Willis E. Brown, Little Rock, Ark.; James G. Hughes, Memphis, Tenn.; Milton L. McCall, New Orleans; William Mingert, Dallas, Texas; and Allan C. Barnes, Cleveland. This seminar has been approved for credit hours by the American Academy of General Practice. There will be no tuition fee.

ILLINOIS

Clinics for Crippled Children—The University of Illinois division of services for crippled children will conduct the following clinics in cooperation with local medical and health organizations:

Sept 14 East St. Louis St. Mary's Hospital, Peoria St. Francis Hospital

Sept 15 Evergreen Park, Little Company of Mary Hospital, Jacksonville Our Saviour's Hospital

Sept 16 Anna City Hospital, Rosiclare, Y.M.C.A. Building

Sept 17, Evanston St. Francis Hospital

Sept 21, Centralia Recreation Center

Sept 22 Aurora Copley Memorial Hospital, Springfield (cerebral palsy) Memorial Hospital

Sept 23 Bloomington St. Joseph's Hospital Chester Lutheran School, Rockford St. Anthony Hospital

Sept 24 Chicago Heights (rheumatic fever), St. James Hospital

Sept 28, Effingham (rheumatic fever), St. Anthony's Emergency Hospital, Peoria, St. Francis Hospital

Chicago

Free Public Lectures—The Museum of Science and Industry, 57th St. and Lake Michigan, announces the following free lectures Sundays, 3 p.m.

Sept 12, A Problem of Thirty Million Americans Hay Fever and Other Allergies, Max Samter, Chicago

Sept 19, Living with Your Ulcers Armand Littman, Chicago

Sept 26 What You Should Know About Arthritis Irving E. Steck, Chicago

Oct 3 Dejected Depressed or Delightfully Drunk, Jules H. Masserman, Chicago

Oct 10 How Old Is Your Infant at Birth Arthur H. Parmelee Sr., Los Angeles

KENTUCKY

Dr. Stovall Honored—J. Watts Stovall, Grayson, president of the Kentucky State Medical Association, will be honored on a "This Is Your Life" type of program at the annual Friends of School Day Picnic at Carter Caves State Park, sponsored by the Carter County Teachers' Association, Sept 17. Dr. Stovall, who has practiced for almost 50 years, has been a member of the Grayson Board of Education for 12 years.

Society News—The Association of Ex-Residents, Fellows, and Interns of the Louisville General Hospital and the University of Louisville School of Medicine was organized at a dinner meeting in June. Dr. DeLou P. Hall, Louisville, was elected the first president. The object of the association is to promote the interest of the Louisville General Hospital and the welfare of those who receive professional training in it, to develop an *esprit de corps* in the house staff, and to sustain an interest in the hospital for those who have completed their training.

MINNESOTA

Southern Minnesota Medical Meeting—The annual meeting of the Southern Minnesota Medical Association will be held at Winona, Sept. 13. The program for the morning session includes

- Carcinoma of the Common Duct. Report of Two Cases William O Finkelnburg Winona
- Indications and Contraindications for Tonsillectomy Jennings D Sjoding, Mankato
- Massive Gastric Hemorrhage with Cause Unknown Preoperatively Charles E. Rea, St. Paul.
- Fundamental Considerations in Diagnosis and Treatment of Tumors of Colon and Rectum Walter A. Fansler and William T Smith, Minneapolis.
- Psychoses Associated with the Postpartum Period Ernest M. Hamm Jr St. Paul.
- Current Status of Radioisotopes in Diagnosis and Treatment of Blood Dyscrasias Charles F Stroebel Rochester
- Precautions in the Use of Cortisone L. Emerson Ward Rochester
- Hearing Loss in Children Detection, Treatment, and Rehabilitation, Kinsey M. Simonton Rochester

The following papers have been scheduled for the afternoon session

- Cardiac Surgery to be announced.
- Tumors of the Brain and Spinal Cord Hendrik J Svien Rochester
- Nursing Education Problem in Minnesota, Thelma Dodd, R.N. St. Paul.
- Teratoma of the Pelvic Colon Presenting in the Lumen Case Report, Stanley T Kucera Northfield.
- Pulmonary Hypertension Due to Thromboembolic Pulmonary Arterial Disease Following Pregnancy Case Report, Ben Sommers St. Paul.
- Meconium Peritonitis, Case Report, George R. McNear Mankato
- Giant Condyloma (Verruca) Stimulating Carcinoma of the Penis, Case Report, Isadore I. Fisher Minneapolis.
- Lipoid Pneumonia Differential Diagnosis of Lung Shadows, J Gordon Beaton Northfield.

MISSOURI

University News.—Dr Iain D Ferguson, Rutherglen, Scotland, who has been teaching at the Institute of Physiology, University of Glasgow, has been named assistant professor of physiology at the St. Louis University School of Medicine

Urology Meetings in Kansas City—A series of meetings on urologic subjects has been announced for the 1954-1955 season by Dr Clarence S Capell, secretary, Kansas City Urological Society. Each meeting, to be held at the Pine Room, Fred Harvey Restaurant, Kansas City Union Station, will consist of a social hour at 6 p. m. followed by dinner, a scientific paper, and the presentation of urograms. The following programs will be given:

- Sept. 15 Clinical Significance of Renal Efficiency William M. Valk, Kansas City Kan. and Robert H Owens Kansas City
- Oct. 7 Uretero-Enterostomy Justin J Cordonnier St. Louis and Arthur L. Stockwell Kansas City
- Nov. 17 Tumor of the Bladder Arnold G Isaac Newton Kan. and Pratt Irby Fort Scott, Kan.
- Jan. 19 1955 The Female Urethra, R. L. Hoffman and William W Leifer Kansas City
- Feb. 16 Untoward Reactions from Urogram Injections Joseph G Siceluff Springfield and Bernell W Andrews Kansas City
- March 16 Urinary Calculi Hjalmar E Carlson and Jacob Zellermayer Kansas City
- April 24 Urogenital Anomalies Oscar W Davidson Kansas City Kan. and Robert B Bristow St. Joseph

The last hour of each session will be devoted to the presentation and interpretation of urograms. All urologists in the area are invited to attend and to take films

MONTANA

State Medical Meeting at Butte—The 76th annual meeting of the Montana Medical Association will be held at the Finlen Hotel, Butte, Sept. 16 to 19, under the presidency of Dr Sidney C Pratt, Miles City. Guest speakers and their first presentations include

- Advances in Cancer Research Brewster S Miller New York.
- Toxemias of Pregnancy John H. Randall Iowa City
- Traumatic Joints, Carol B Larson Iowa City
- Carcinoma of the Prostate—Use of Radioactive Gold Rubin H Flocks Iowa City
- Treatment of Leukemia and Related Diseases Willis M Fowler Iowa City
- Nutrition of the Surgical Patient Before and After Surgery Robert T Tidrick Iowa City
- Gout and Its Therapy Charley J Smyth Denver

The scientific sessions will be concluded Friday with a clinical pathological conference 4:10 p. m., moderated by Dr John A. Newman, Butte, with Drs Deane C Epler, Bozeman, George

T R. Fahlund, Great Falls and Elizabeth Grumm, Billings, as collaborators. A reception at 7 p. m. will precede the annual banquet, at which Dr Morris A. Gold Butte will serve as toastmaster. Palmer Hoyt, editor and publisher of the *Denver Post* will present "The Doctors Part in the International Crisis." The Silver Bow County Medical Society, under the presidency of Dr Robert G. Kroeze, Butte, will be host to all members and guests of the association at a friendship hour Friday, 7:30 to 9 p. m. Dr Pratt will extend greetings at a luncheon of the women's auxiliary, which will meet concurrently, and Dr Park W. Willis Jr, Hamilton, chairman of the public relations committee of the Montana Medical Association, will deliver an address. Dr Flocks will address the dinner meeting of the Montana Urological Society, Wednesday, 6:30 p. m., and Dr Tidrick will discuss pediatric surgery at the dinner of the Montana Pediatric Society, Wednesday, 8 p. m.

OHIO

Postgraduate Radio Program—Two contributions by Dr Charles A. Doan, dean Ohio State University College of Medicine, Columbus, will be included in the forthcoming postgraduate radio program series, "For Doctors Only." "White Blood Cells in Health and Disease" will be broadcast Sept. 16, and "The Action of Drugs and Toxic Agents on the Blood Picture" will be heard Oct. 7, both from station WNYC.

Personal.—Dr Jacob L. Bubis, formerly chief of obstetrics and gynecology of Mount Sinai Hospital in Cleveland, has retired from the practice of medicine at the age of 69, after 46 years of service. Dr Richard D. Bryant, associate professor of obstetrics at his alma mater, the University of Cincinnati College of Medicine, recently presented a paper entitled "Toxemia of Pregnancy" before the International Congress on Obstetrics and Gynecology at Geneva, Switzerland.

Refresher Course in Aviation Medicine.—A postgraduate refresher course in aviation medicine will be offered at the Ohio State University Health Center, Columbus, Sept. 13 to 18 under the joint sponsorship of the college of medicine and the Civil Aeronautics Administration. This course, for private physicians, medical directors of airlines, and aeronautical industries, is designed to give information on medical problems peculiar to aviation and particularly civil aviation. Topics to be covered will include aviation toxicology, cabin pressurization, effect of deceleration, cardiovascular diagnosis and problems, visual problems, psychiatry, endocrine and metabolic disorders and recent innovations in aviation and space medicine. The faculty will include specialists from the C.A.A., Western Reserve Medical School, the University of Pennsylvania and Ohio State University. Applications have been received from physicians as far distant as Alaska and Mexico.

WEST VIRGINIA

Meeting on Tuberculosis.—The 34th annual meeting of the West Virginia Tuberculosis and Health Association will be held at the Frederick Hotel in Huntington, Sept. 16 and 17. Thursday afternoon the West Virginia Trudeau Society will sponsor the following program:

- Emotional Aspects of the Tuberculous Claire M. Vernier Ph.D. Martinsburg.
- Modern Treatment of Tuberculosis Ross L. McLean Baltimore
- Surgery in the Treatment of Tuberculosis M. Lawrence White Jr Huntington.

Dr Howard R. Crews, Huntington, will serve as moderator for an x-ray symposium in which case reports of tuberculosis and chest diseases will be presented and discussed. Physicians are requested to bring films, with confirmed diagnosis for discussion and review.

Speakers Friday morning will include Quin F. Curtis, Ph.D., head department of psychology, West Virginia University, Morgantown; Dr Helen B. Fraser, director of the department of disease control, state department of health, Charleston; and Robert J. Weymueller, executive secretary, National Conference of Tuberculosis Workers, New York. Dr A. B. Price, regional medical director, region 2, Department of Health Education, and Welfare, Washington, D.C., speaker at the annual dinner Thursday evening will present "Views of Public Health Today." Both medical and general sessions will be open to the public.

GENERAL

American Association of Blood Banks—The American Association of Blood Banks will hold its annual meeting at the Shoreham Hotel, Washington, D C, Sept 13 to 15. A technician refresher course Sunday, 3 to 5 p m, will be followed by a buffet supper provided by the Metropolitan Washington Blood Bank Association. The address of welcome will be delivered Monday morning by Dr Preston A McLendon, Washington, D C, president, Medical Society of the District of Columbia. At 10 40 a m there will be a panel on hemolytic transfusion reactions, followed by discussion of individual papers. Luncheon discussion groups on hemolytic transfusion reactions, the hepatitis problem, afibrinogenemia and related problems, and typing and cross-matching techniques will meet daily from 12 30 to 2 30 p m, and motion pictures will be shown from 2 to 5 p m. On Wednesday, 1 to 3 p m, a luncheon panel on public relations is scheduled. The Hon Val Peterson, former three-term governor of Nebraska and federal civil defense administrator since March 4, 1953, will be the principal speaker at the banquet. As F C D A administrator, Mr Peterson is also national coordinator of natural peacetime disaster relief efforts. His subject for the banquet will be "Blood Banking and the Civil Defense Program." Dr Aaron Kellner, New York, is president of the association.

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

Area	Aug 14, 1951		Aug 15, 1951 Total
	Paralytic Type	Total Cases Reported	
New England States			
Maine	2	6	23
New Hampshire		7	5
Vermont	2	2	5
Massachusetts	10	39	22
Rhode Island		1	10
Connecticut	6	17	15
Middle Atlantic States			
New York	21	87	169
New Jersey	22	30	47
Pennsylvania		57	63
East North Central States			
Ohio	29	108	166
Indiana	20	49	40
Illinois	47	96	161
Michigan	50	118	148
Wisconsin	11	37	41
West North Central States			
Minnesota	25	62	172
Iowa	19	78	49
Missouri	24	49	54
North Dakota	1	6	14
South Dakota		4	6
Nebraska	11	23	18
Kansas	4	45	32
South Atlantic States			
Delaware	3	4	2
Maryland	7	8	26
District of Columbia	2	4	6
Virginia	20	39	52
West Virginia	11	22	38
North Carolina	22	69	55
South Carolina	7	22	8
Georgia	22	57	18
Florida	20	68	84
East South Central States			
Kentucky	19	33	21
Tennessee	5	43	38
Alabama	11	17	19
Mississippi	6	40	21
West South Central States			
Arkansas	6	16	19
Louisiana	7	18	11
Oklahoma	6	37	40
Texas	61	159	70
Mountain States			
Montana	2	4	10
Idaho		3	3
Wyoming	5	24	1
Colorado	9	26	8
New Mexico	4	12	4
Arizona	3	15	43
Utah		2	6
Nevada		18	
Pacific States			
Washington	10	26	13
Oregon	4	12	10
California	110	197	170
Territories and Possessions			
Alaska	10	24	2
Hawaii	4	6	1
Puerto Rico			
Total	710	1,934	1,997

Meeting of Military Ophthalmologists and Otolaryngologists—The Society of Military Ophthalmologists and the Society of Military Otolaryngologists will hold a joint dinner meeting at the time of the International Congress of Ophthalmology and the annual meeting of the American Academy of Ophthalmology and Otolaryngology in New York in September. Dr Frederick C Cordes, professor of ophthalmology, University of California School of Medicine, San Francisco, will be awarded the plaque of honorary membership to the Society of Military Ophthalmologists at this meeting. Cocktails and dinner will be served at 6 p m, Sept. 21, Shelton Hotel, Lexington Ave and 49th St. All members, ophthalmologists, and otolaryngologists on active duty with the armed forces are invited to attend. Application should be made to Col John H King Jr, secretary-treasurer, Society of Military Ophthalmologists, Eye Clinic, Walter Reed Army Hospital, Washington 12, D C.

Fellowships in Radiation Therapy—American Cancer Society clinical fellowships in radiation therapy are offered in 1955-1956 to qualified graduates in medicine who have already had thorough basic training in the principles and practice of radiation therapy and who desire to have additional training at certain clinics in the United Kingdom, the Scandinavian countries, and France. Fellowships are available to citizens of the United States who are graduates of recognized medical schools in the United States and are under 40 years of age. In the selection of applicants, priority will be given to physicians (1) who are already certified by the American Board of Radiology, (2) who have completed the required training in preparation for board examinations but have not yet taken the examinations, and (3) who, while intending to complete board requirements and take the examinations, are still in the training period. The annual stipend for fellows in radiation therapy is \$4,500, including travel. The fellowship period shall be one year, although renewal for one year or less will be considered. Fellowships may commence at any time mutually agreeable to the institution and the fellow. Applications for fellowships for the year 1955-1956 must be submitted before Oct 1, 1954.

James Picker Awards—The James Picker Foundation announces the award of nine grants and two fellowships in radiological research for the coming year. Grants were made to the following investigators in the United States:

Dr Henry Doubilet, New York University College of Medicine, for continued work on the x-ray visualization of the biliary and pancreatic ducts.

Dr Jack Friedman, Mount Sinai Hospital, Minneapolis, for studies on the effect of emotion on the mucosal pattern of the small bowel.

Dr Jack W Grossman and Dr J L Howarth, Lovelace Foundation for Medical Education and Research, Albuquerque, N M, for development of techniques for dose estimation using a cobalt 60 unit.

Dr George Jacobson and Dr Donald C Balfour Jr, University of Southern California School of Medicine, Los Angeles, for an investigation of the use of pharmacological agents in the radiological diagnosis of gastrointestinal disease.

Dr Gardner Middlebrook, National Jewish Hospital, Denver, for continued pulmonary angiographic pre-resection and post-resection studies in tuberculosis and simulating diseases.

Dr Henry Plenk, University of Utah College of Medicine, for continued studies on the influence of drugs on radiation reaction.

Dr William J Tobin, Georgetown University School of Medicine, Washington D C, for continued study of bone architecture.

Fellowships were awarded for the coming year to Dr Murray G Smyth Jr, for studies on the distribution and dosage of colloidal and particulate sources of radioactivity, under the guidance of Dr Richard H Chamberlain at the University of Pennsylvania School of Medicine, Philadelphia, and to Dr Kakarla Subbarao, for an investigation of regional ileus as a roentgenological manifestation of disease, under the guidance of Dr Maxwell H Poppel at the Bellevue Hospital, New York.

American Hospital Association—The annual convention of the American Hospital Association will be held in Chicago, Sept 13 to 16. At the general session Monday, 2 15 p m, at Navy Pier, the Hon Lister Hill, senator from Alabama, will discuss "Meeting Public Needs," after which Dr Alan Gregg, New York, vice-president of the Rockefeller Foundation, will consider "Individual Responsibility—The Keystone of the Voluntary Way." From 7 to 12 p m a "get-acquainted" evening has been sched-

uled at the Aragon ballroom Tickets (\$5) may be purchased at the registration center of the Palmer House Saturday and Sunday and at Navy Pier on Monday

Dr Martha A O Malley, director, division of hospital and institutional services, Indiana State Board of Health, Indianapolis, will open the session on administrator-trustee-medical-staff relationships in small hospitals, Tuesday, 9 30 a m., with "Responsibility of the Board of Trustees," after which Dr Wayne C Rydberg, Swedish Hospital, Minneapolis, will discuss "Medical Staff Organization and Relationships" and L C Mortrud, Ingalls Memorial Hospital, Harvey, Ill., will present data on the administrator Dr Edward L. Turner, Secretary, A M A Council on Medical Education and Hospitals, Chicago, will serve on the panel of commentators for the concurrent session on hospital planning to meet changing needs. Dr Frank R Bradley, St Louis, president-elect, American Hospital Association, will preside at the general session Tuesday, 2 15 p m., when "Public Opinion—A Challenge to Hospitals" will be the topic Dr Edmund J Morrissey, San Francisco, former president, San Francisco Medical Society, will discuss "The Physician's Role in Hospital Care"

A problem clinic for small hospitals will be conducted Wednesday morning Concurrently there will be a panel discussion, "Improving Our Face-to-Face Relationships," by Dr Norman S Moore, Ithaca, N Y, Verne Kallejian, Ph D, director of education, American Hospital Association, Chicago, and members of the staff of Englewood Hospital, Chicago Hospital Accreditation—What It Means will be the topic for the general session Wednesday afternoon Dr Newell W Philpott, Montreal, Canada, chairman, board of commissioners Joint Commission on Accreditation of Hospitals, will open the session with "Hospital Accreditation—A Public Service," after which Dr Kenneth B Babcock, Chicago, director of the joint commission, will discuss "The Future of Hospital Accreditation" Dr Julian P Price, Florence S C, Trustee, American Medical Association will have as his topic "Proper Medical Staff Organization", Dr Jack Masur, assistant surgeon general chief, Bureau of Medical Services, Public Health Service Washington D C, will talk on good medical records, and Dr LeRoy H Sloan, vice-chairman of the board of commissioners, joint commission, will discuss other hospital services.

A Hospital Is Ready for Accreditation—Or Is It? will be the question considered Thursday morning by a panel including Dr Masur, chairman, and Drs Anthony J J Rourke, New Rochelle, N Y Edward H Leveros, Director, Division of Hospitals and Graduate Education, A M A Council on Medical Education and Hospitals, Robert S Myers, Fernald C Fitts Jose L Gonzalez, and Kenneth B Babcock Chicago and Julian P Price, Florence, S C Thursday afternoon Dr Howard A Rusk, New York, will talk on needs and distribution of care for the chronically ill and Dr Harry F Becker, Battle Creek field secretary, Michigan State Medical Society, will discuss "Controlling the Cost the Use and Misuse of High Quality Hospital Care" The annual banquet will be held Thursday, 7 p m., in the grand ballroom of the Palmer House The new president, Dr Frank R Bradley, director, Barnes Hospital, St. Louis, will be inducted

LATIN AMERICA

International Congress of Surgeons—The ninth international congress of the International College of Surgeons recently held in Sao Paulo, Brazil was attended by 27 delegations from different countries before whom 339 scientific papers were presented The opening session, at which the governor of the state of Sao Paulo presided, was addressed by Dr Max Thorek, founder of the International College of Surgeons Dr Carlos Gama chairman of the committee of arrangements and Dr Oscar Cintra Gordinho president of the Brazilian section of the International College of Surgeons Owing to the absence of the retiring president Prof Hans Finsterer of Vienna because of illness, Dr Francisco Grana of Peru former president of the International College of Surgeons presided over the meeting of the house of delegates. Vienna was chosen as the site for the 10th congress to be held in 1956 The following new sections were approved obstetrics and gynecology neurosurgery plastic surgery ophthalmology and otolaryngology, and orthopedics. At the dinner congressman Camillo Aschar spoke in the name of

the Brazilian section, Dr Max Thorek, Chicago, in the name of the college and Dr Edward J McCormick, then President of the American Medical Association, in that of the international section The central theme of the congress, "Experience with Socialized Medicine Throughout the World," was discussed by Dr McCormick, whose topic was "The Malignancy of Socialized Medicine" Dr Maurice Dorbes, Morocco, who explained how the French government organized the medical services in Morocco, Roelf Ruding, Holland, who spoke of "The Rights and Principles of Freedom in Medicine", Dr David B Allman, Atlantic City, N J, Trustee of the A M A, who presented "Delusion of Socialized Medicine" Dr Morris Fishbein, Chicago, who emphasized the unanimity of opinion against socialized medicine, Pierre Lachapelle, Bordeaux, who told how the French government adopted an intermediate solution conciliating the opposing aspects of the problem and Cesarino Junior, Brazil, who related the situation in that country, where socialized medicine is, to some extent, adopted, there being 5,172 government-sponsored medical institutions with a staff of 20,905 physicians, constituting 40% of the medical activities in the country Other themes of the congress were "Antibiotics and Their Application in the Medical Specialties" and "Contrast Media in Radiology" Surgery among the Incas was discussed by Dr Francisco Grana, and the medical practices among the Navajo Indians were discussed by Dr Suren H Babington, Berkeley, Calif Dr Desmond Mulvany, London, England, spoke about

An Investigation into the Radioactive Content of the Human Body and Its Significance as a Factor in the Etiology of Cancer", Dr Raul Montero, Argentina, about Radioactive Isotopes in Neurosurgery", and Dr Moses Beherend Philadelphia, about "Evolution of Gastrointestinal Surgery" Cancer was discussed by Dr August F Daro, Chicago Dr Julio Baistrocchi, Argentina, and Drs Fernando Gentil and Arrigo Raia, Brazil

FOREIGN

Medical Meetings of France—The medical societies of general medicine in France and abroad are invited to participate in the second session of the Journées Médicales de France et de l'Union Française in June, 1955, at Strasbourg Each participating society is allowed one communication or report on a subject chosen by it, the name of the reporter and the subject to be sent to the secretariat not later than Oct. 15 The general subject of all reports and communications is "New Ideas in Therapeutics" A typewritten summary of the report in triplicate must reach the permanent directing committee before Jan 31, 1955, and must not exceed six pages of 45 lines each Information may be obtained from the Secretary General, Dr L Michelet, 12, rue Pierre Geofroix, Colombes (Seine) France

MEETINGS

AMERICAN MEDICAL ASSOCIATION Dr George F Lull 535 North Dearborn St., Chicago 10 Secretary
1954 Clinical Meeting Miami Florida, Nov 29 Dec. 2.
1955 Annual Meeting Atlantic City N J, June 6-10
1955 Clinical Meeting Boston Nov 29 Dec. 2.
1956 Annual Meeting Chicago, June 11 15
1956 Clinical Meeting Seattle Nov 27 30

ACADEMY OF PSYCHOSOMATIC MEDICINE, New York, Oct. 8 9 D Ethan Allan Brown 75 Bay State Road Boston 15 Secretary

AMERICAN ACADEMY FOR CEREBRAL PALSY Williamsburg Inn Williamsburg Va Nov 4-6 Dr Harry E Barnett 116 South Michigan Blvd Chicago 3 Secretary

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY The Waldorf Astoria, New York, Sept. 19-24 Dr W L Bennett, 109 First Avenue Bldg., Rochester Minn Executive Secretary

AMERICAN ACADEMY OF PEDIATRICS Palmer House Chicago Oct 4-7 Dr E H Christenson 610 Church St., Evanston Ill. Secretary

- AMERICAN ASSOCIATION OF BLOOD BANKS The Shoreham, Washington, D C Sept 13-16 Miss Marjorie Saunders, 3500 Gaston Ave., Dallas 4, Texas Secretary
- AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS Sheraton Cadillac Hotel Detroit Oct 4-8 Miss Doris Gleason 510 N Dearborn St., Chicago 10 Executive Director
- AMERICAN CANCER SOCIETY Hotel Roosevelt New York Oct 17-24 Dr Charles S. Cameron 47 Beaver St. New York 4 Medical Director
- AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION Lake Placid Club, Lake Placid N Y Oct 14-16 Dr Marshall N Fulton 124 Waterman St. Providence 6 R I Secretary
- AMERICAN COLLEGE OF GASTROENTEROLOGY The Shoreham Washington, D C Oct 25-30 Dr A. Veres Rossien 33 West 60th St. New York 23 Secretary
- AMERICAN FRACTURE ASSOCIATION Shamrock Hotel Houston Texas Oct 11-14 Dr H W Wellmerling 626 Grlesheim Bldg. Bloomington Ill., Secretary-General
- AMERICAN HEART ASSOCIATION Jung Hotel New Orleans Oct 26-30 Mr Irving Hexter 44 East 23rd St. New York 10 Secretary
- AMERICAN HOSPITAL ASSOCIATION Palmer House Chicago Sept 13-16 Dr E. L. Crosby 18 East Division St. Chicago 10 Director
- AMERICAN MEDICAL WRITERS ASSOCIATION Hotel Sherman Chicago Sept 24 Dr Harold Swanberg 510 Maine St. Quincy Ill. Secretary
- AMERICAN OTORHINOLOGIC SOCIETY FOR PLASTIC SURGERY The Waldorf Astoria New York Sept 19 Dr Louis J. Felt 66 Park Ave. New York Secretary
- AMERICAN PUBLIC HEALTH ASSOCIATION Memorial Auditorium Buffalo, N Y Oct 11-15 Dr Reginald M. Atwater 1790 Broadway New York 19 Executive Secretary
- AMERICAN ROENTGEN RAY SOCIETY Shoreham Hotel Washington D C, Sept 21-24 Dr Barton R. Young Germantown Hospital Philadelphia 44 Secretary
- AMERICAN SOCIETY OF ANESTHESIOLOGISTS Netherland Plaza Hotel Cincinnati Oct 25-30 Dr J. Earl Remlinger Jr. 188 West Randolph St. Chicago 1, Secretary
- AMERICAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS Sheraton Hotel, Chicago Oct 31-Nov 1 Dr O. J. Pollak P O Box 228 Dover, Del., Secretary
- AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE Hotel Peabody, Memphis Tenn. Nov 4-6 Dr John E. Larsh Jr. Dept. of Parasitology, School of Public Health Univ. of North Carolina Chapel Hill, N C Secretary
- AMERICAN THERAPEUTIC SOCIETY The Chase Hotel St. Louis Nov 4-7 Dr Oscar B. Hunter 915 Nineteenth St. N W, Washington D C, Secretary
- ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA Royal York Hotel, Toronto Canada, Oct 12-14 Dr Henry B. Kirkland, P O Box 594 Newark N J, Secretary
- ASSOCIATION OF AMERICAN MEDICAL COLLEGES French Lick Springs Hotel, French Lick, Ind. Oct 17-20 Dr Dean F. Smiley 185 N. Wabash Ave. Chicago 1 Secretary
- CALIFORNIA ACADEMY OF GENERAL PRACTICE, Statler Hotel Los Angeles Oct 24-27 Mr Wm W. Rogers 450 Mission St. San Francisco, Executive Secretary
- CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNCOLOGISTS Hotel Jefferson St. Louis Oct 7-9 Dr Harold L. Gainey, Suite 602 116 S. Michigan Ave. Chicago 3 Secretary
- CENTRAL SOCIETY FOR CLINICAL RESEARCH, Drake Hotel Chicago Oct 29-30 Dr Robert H. Ebert 950 East 59th St. Chicago 37 Secretary
- CLINICAL ORTHOPAEDIC SOCIETY Sheraton Hotel Chicago Oct 7-9 Dr John H. Moe, 825 Nicollet Ave. Minneapolis Secretary
- COLORADO STATE MEDICAL SOCIETY, Broadmoor Hotel Colorado Springs, Sept 21-24 Mr Harvey T. Sethman, 835 Republic Building Denver 2, Executive Secretary
- CONGRESS OF NEUROLOGICAL SURGEONS, The Waldorf-Astoria, New York, Nov 4-6 Dr Bland W. Cannon, 1092 Madison Ave., Memphis, Tenn., Secretary
- DELAWARE, MEDICAL SOCIETY OF DOVER Oct 11-13 Dr Norman L. Cannon, 1208 Delaware Ave., Wilmington Executive Secretary
- DISTRICT OF COLUMBIA MEDICAL SOCIETY OF THE Hotel Shoreham Washington, D C Nov 1-3 Mr Theodore Wiprud 1718 M St. N W Washington, D C Secretary
- GULF COAST CLINICAL SOCIETY, Edgewater Park, Miss., Oct 21-22 Dr F. C. Minkler, Pascagoula Miss. Secretary
- INDIANA STATE MEDICAL ASSOCIATION Murat Temple, Indianapolis, Oct 26-28 Mr James A. Waggener, 23 East Ohio St., Indianapolis 4 Executive Secretary
- INDUSTRIAL HEALTH CONFERENCE (Houston), Shamrock Hotel Houston, Tex. Sept 23-25 Dr Sidney Schnur, 411 Medical Arts Bldg. Houston 2, Tex., Chairman
- INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA, Municipal Auditorium, Minneapolis, Nov 1-4 Dr Erwin R. Schmidt, 1300 University Ave., Madison 6 Wis., Secretary
- KANSAS CITY SOUTHWEST CLINICAL SOCIETY, Kansas City, Mo., Oct 4-7 Dr Ira C. Layton, 306 E. Twelfth St., Kansas City 6E, Mo., Secretary
- KENTUCKY STATE MEDICAL ASSOCIATION Brown Hotel, Louisville Sept 21-23 Dr Bruce Underwood, 620 S. Third St., Louisville 2, Secretary
- MICHIGAN STATE MEDICAL SOCIETY, Sheraton-Cadillac Hotel, Detroit, Sept. 29-Oct 1 Dr L. Fernald Foster, 606 Townsend St., Lansing 15, Secretary
- MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH, Thorne Hall Auditorium, Northwestern University Medical Campus, Chicago, Oct 28 Dr R. L. Grissom, Univ. of Nebraska College of Medicine, Dept. of Internal Medicine Omaha 5 Secretary
- MISSISSIPPI VALLEY MEDICAL SOCIETY, Hotel Sherman Chicago Sept 22-24 Dr Harold Swanberg 510 Maine St., Quincy, Ill., Secretary
- MONTANA MEDICAL ASSOCIATION, Hotel Finlen, Butte, Sept. 16-19 Mr L. R. Hegland 1236 N. 28th St., Billings Executive Secretary
- NATIONAL ASSOCIATION FOR MENTAL HEALTH, Hotel Statler, New York, Oct 23-25 Mr Robert M. Heininger, 1790 Broadway, New York 19, Executive Director
- NATIONAL PROCTOLOGIC ASSOCIATION Maryland Hotel, Chicago, Oct 7-9 Dr George E. Mueller 59 E. Madison St., Chicago 2 Executive Secretary
- NATIONAL REHABILITATION ASSOCIATION Baltimore Oct 24-27 Mr E. B. Whitten, 514 16 Arlington Bldg., 1025 Vermont Ave. N W, Washington D C, Executive Director
- NEW HAMPSHIRE MEDICAL SOCIETY Mt. Washington Hotel Bretton Woods, Oct 3-5 Dr W. H. Butterfield, 18 School St. Concord, Secretary
- NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE, Wichita Falls Tex., Sept 22 Dr C. H. Wilson, 1300 Eighth St. Wichita Falls, Tex. Chairman
- OKLAHOMA CITY CLINICAL SOCIETY CONFERENCE Oklahoma City Oct 25-28 Dr Charles E. Leonard, 512 Medical Arts Bldg. Oklahoma City 2, Secretary
- OMAHA MID-WEST CLINICAL SOCIETY Paxton Hotel, Omaha Oct 25-28 Dr Louis E. Moon, 1031 Medical Arts Bldg. Omaha 2 Secretary
- OREGON STATE MEDICAL SOCIETY, Heathman Hotel, Portland Oct 13-16 Dr Charles E. Littlehales, 1115 S. W. Taylor St. Portland 5, Executive Secretary
- PENNSYLVANIA MEDICAL SOCIETY OF THE STATE OF Bellevue Stratford Hotel Philadelphia, Oct 17-22 Dr Harold B. Gardner 230 State St., Harrisburg Secretary
- REGIONAL MEETINGS AMERICAN COLLEGE OF PHYSICIANS
- Midwest, Indianapolis Claypool Hotel, Oct 9 Dr Wendell A. Shullenger, 3470 Central Ave. Indianapolis Chairman
- New England Hartford Conn. Oct 22 Dr John C. Leonard, 80 Seymour St. Hartford Conn. Chairman
- New Jersey Newark Nov 3 Dr Edward C. Klein Jr., 6 South Kingman Rd. South Orange, N J Governor
- Southeastern Edgewater Gulf Hotel Edgewater Park Miss., Oct 15-16 Dr E. Dice Lineberry, 1529 N. 25th St., Birmingham 4, Ala., Governor
- SOUTHWESTERN SURGICAL CONGRESS Skirvin Hotel Oklahoma City Sept 20-22 Dr C. R. Rountree, 1227 Classen Drive Oklahoma City 3, Secretary
- THE CONSTANTINIAN SOCIETY The Broadmoor Colorado Springs Colo., Sept 26-29 Dr C. F. Shook P O Box 1035 36 Toledo 1, Ohio, Secretary
- VERMONT STATE MEDICAL SOCIETY, Mt. Washington Hotel, Bretton Woods N H Oct 3-5 Dr James P. Hammond, 337 South St. Bennington, Secretary
- VIRGINIA MEDICAL SOCIETY OF, Shoreham Hotel Washington D C, Oct 31-Nov 3 Mr Robert I. Howard, 1105 W. Franklin St., Richmond, Executive Secretary
- WASHINGTON STATE MEDICAL ASSOCIATION Davenport Hotel, Spokane, Sept 18-22 Dr Bruce Zimmerman, 1309 Seventh Ave., Seattle 1, Secretary
- WESTERN ASSOCIATION OF RAILWAY SURGEONS Sun Valley Idaho Sept 23-25 Dr Leo L. Stanley, 1322 Fifth Ave. San Rafael, Calif., Secretary
- WISCONSIN STATE MEDICAL SOCIETY OF, Hotel Schroeder Milwaukee Oct 5-7 Mr Charles H. Crownhart, 704 E. Gorham St., Madison 3 Secretary
- FOREIGN AND INTERNATIONAL**
- COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE Royal Festival Hall London, England June 21-25 1955 Mr J. H. Harley Williams Tavistock House North, Tavistock Square, London WC1 England, Secretary General
- CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS Madrid Spain Sept 26-Oct 2 1954 Secretariat Escuela de Tisiologia Ciudad Universitaria Madrid, Spain
- CONFERENCE OF THE SOLVAY INSTITUTE OF SOCIOLOGY Universiti Libre de Bruxelles, Brussels, Belgium Oct 18-23, 1954 For information write Assistant to the Secretary, A. Dorsinang Smets Solvay Institute of Sociology, Parc Leopold Brussels 4 Belgium
- CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY London England, July 18-23 1955 Dr C. B. Frisby, National Institute of Industrial Psychology 14 Welbeck St., London W1, England President
- CONGRESS OF INTERNATIONAL ASSOCIATION FOR THE PREVENTION OF BLINDNESS New York, N Y, U S A, Sept 12-17, 1954 Professor Franceschetti, 2 avenue Mirmot, Geneva, Switzerland, Secretary-General

CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION Cambridge England July 4-8 1955 Mr James G L Jackson 152 Harley St London W1 England Executive Secretary-General

CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY Vichy Paris and Enghien France Sept. 24-27 1954 Dr Francon, 55 rue des Mathurins Paris 8^e France Secretary-General

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Bournemouth England April 26-29 1955 Mr P Arthur Wells Royal Sanitary Institute 90 Buckingham Palace Road London SW1 England Secretary

INTER AMERICAN CONGRESS OF RADIOLOGY Shoreham Hotel Washington D C U S A April 24-29 1955 Dr Eugene P Pendergrass 3400 Spruce St. Philadelphia 4 Pa U S A Secretary-General

INTER AMERICAN SESSION AMERICAN COLLEGE OF SURGEONS Universidad Mayor de San Marcos de Lima Lima Peru S A Jan. 11-14 1955 Dr Michael L. Mason 40 East Erie St. Chicago 11 Ill. U S A Secretary

INTERNATIONAL ANATOMICAL CONGRESS Paris France July 25-30 1955 Prof Gaston Cordier 45 rue des Saints-Pères Paris 6^e France Secretary-General

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY Ambassador Hotel Los Angeles Calif U S A., Oct. 10-14 1954 For information write Dr T H Seldon 102 110 Second Avenue S W Rochester Minn U S A.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY Brussels Belgium Aug 1-6 1955 Prof C Liebecq 17 Place Delcour Liege Belgium Secretary-General

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY Lausanne Switzerland May 26-31 1955 Professor Hauduroy 19 rue Cesar Roux, Lausanne Switzerland Secretary-General

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST Barcelona Spain Oct. 4-8 1954 Mr Murray Kornfeld 112 East Chestnut St., Chicago 11 Ill U S A Executive Secretary

INTERNATIONAL CONGRESS ON THE HISTORY OF MEDICINE Rome and Salerno Italy Sept. 13-20 1954 For information write Segreteria XIV Congresso Internazionale di Storia della Medicina Istituto di Storia della Medicina Clita Universitaria, Rome, Italy

INTERNATIONAL CONGRESS OF HYDATID DISEASE, Madrid Spain Sept. 25-30 1954 Dr Jesus Calvo Melendro Hospital Provincial, Soria Spain, Secretary-General

INTERNATIONAL CONGRESS OF INDUSTRIAL MEDICINE, Naples Italy Sept. 13-19 1954 Professor Scipione Caccuri Director Institute of Industrial Medicine Policlinico Naples Italy Chairman Organizing Committee

INTERNATIONAL CONGRESS OF INTERNAL MEDICINE Stockholm Sweden Sept. 15-18 1954 Professor Anders Kristenson Karolinska Sjukhuset, Stockholm 60 Sweden Secretary-General

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY Luxemburg Luxembourg Nov 7-12, 1954 Colonel A R. Vernengo Direction General de Sanidad Militar Pozos 2045 Buenos Aires Argentina S A Secretary-General

INTERNATIONAL CONGRESS OF NUTRITION Amsterdam Netherlands Sept. 13-17 1954 Dr M van Eeelen Centraal Instituut voor Voedingsonderzoek TNO 61 Catharynesingel Utrecht, Netherlands General Secretary

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY University of Montreal and McGill University Montreal, Canada Sept. 9-11 1954 and Waldorf Astoria New York N Y U S A Sept. 12-17 1954 Dr William L. Benedict 100 First Avenue Building Rochester Minn U S A Secretary-General

INTERNATIONAL CONGRESS OF PLASTIC SURGERY Stockholm Sweden Aug 1-4 1955 and Uppsala Sweden Aug. 5 1955 Dr Tord Skoog, Uppsala Sweden General Secretary

INTERNATIONAL FEDERATION OF MEDICAL STUDENT ASSOCIATIONS Rome Italy Oct. 15 1954 Mr Jorgen Falck Larsen 12 Kristianiagade Copenhagen O Denmark, General Secretary

INTERNATIONAL HOSPITAL CONGRESS Lucerne Switzerland May 30-June 3 1955 Capt J E Stone International Hospital Federation 10 Old Jewry London E.C.2 England Hon Secretary

INTERNATIONAL SOCIETY OF BLOOD TRANSFUSION Paris France Sept. 12-19 1954 For information write Colonel Julliard Société Internationale de Transfusion Sanguine 53 boulevard Diderot, Paris 12^e France

INTERNATIONAL SURGICAL CONGRESS Geneva Switzerland May 23-26 1955 Dr Max Thorek 1516 Lake Shore Drive Chicago Illinois, U S A Secretary-General

JAPAN MEDICAL CONGRESS Kyoto University and Kyoto Prefectural Medical College Kyoto Japan April 15 1955 Dr Mitsuharu Goto University Hospital Medical Faculty of Kyoto University Kyoto Japan Secretary-General

LATIN AMERICAN CONGRESS OF ANESTHESIOLOGY Sao Paulo Brazil S A Sept. 12-18 1954 Dr Zairo E. G Vieira Praca Floriano 55-7 And Rio de Janeiro Brazil S A Secretario

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE Lima Peru S A., Feb 14-19 1955 Dr Cassius Lopez de Victoria 176 East 71st St New York 21 N Y., U S A Executive Director

MEDICAL JOURNALISM MEETING Exposition Universelle Romaine Rome Italy Sept 30 1954 Dr H Clegg B.M.A. House Tavistock Square London WC1 England Secretary

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION CONGRESS Lake Garda, Italy Sept 15-21 1954 Dr Ada Chree Reid 118 Riverside Drive New York 24 N Y., U S A President.

PAN AMERICAN ACADEMY OF GENERAL PRACTICE Lima Peru S A., Feb 11-25 1955 Dr Arturo Martinez, 54 East 72nd St. New York 21 N Y U S A Secretary

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS Hotel Gloria Rio de Janeiro Brazil, S A Oct. 2-13 1954 Dr Paul S Schantz, 103 West Main St Ephrata, Pa. U S A Executive Secretary

PAN PACIFIC SURGICAL CONGRESS Honolulu Hawaii Oct. 7-18 1954 Dr F J Pinkerton Suite 7 Young Bldg. Honolulu 13 Hawaii, Director General

WORLD CONGRESS OF CARDIOLOGY Washington D C U S A. Sept. 12-18 1954 Dr L. W Gorham 44 East 23rd St. New York 10 N Y U S A Secretary-General

WORLD CONGRESS OF INTERNATIONAL SOCIETY FOR THE WELFARE OF CRIPPLES Scheveningen The Hague, Netherlands, Sept 13-17 1954 Secretariat. Miss H P Post, Pieter Lastmarkade 37 Amsterdam Z, Netherlands

WORLD MEDICAL ASSOCIATION Rome Italy Sept. 26-Oct. 2, 1954 Dr Louis H. Bauer 345 East 46th St. New York 17 N Y U S A Secretary-General

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Oral* Ann Arbor Oct. 15-18 To be eligible candidates must have completed thirty-six months of training by October 1 Final date for filing application was May 1 Exec Sec Miss Janet Newkirk, 129 E. 52nd St., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE *Oral* New York, Sept. 22-24 (candidates on the east coast) The closing date for acceptance of applications was April 1 *Written* Oct. 18 Final date for acceptance of applications was May 1 *Subspecialties Allergy* New York, Sept. 23 and *Pulmonary Disease* New York, Sept. 24 Closing date for acceptance of applications was May 10 Exec Sec-Treas Dr William A Werrell One West Main St. Madison 3 Wis

AMERICAN BOARD OF NEUROLOGICAL SURGERY *Oral* New Haven November Final date for filing application is November 1 Sec Dr Leonard T Furlow 600 S Kingshighway St. Louis 10

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Part I* Various Centers Feb 4 *Part II* Chicago Deadline for receipt of applications is October 1 Sec Dr Robert L. Faulkner 2105 Adelbert Road Cleveland 6

AMERICAN BOARD OF OPHTHALMOLOGY *Practical examinations 1954* New York City Dec 5-9 Final date for filing applications was July 1 1953 *Written 1955* Various cities Jan 24-25 Final date for filing application was July 1 1954 *Practical examinations 1955* Philadelphia, June 10-15 Chicago Oct 9-14 Sec Dr Edwin B Dunphy 56 Ives Road Cape Cottage Maine

AMERICAN BOARD OF ORTHOPAEDIC SURGERY *Oral and Written* Los Angeles Jan. 26-28 Final date for filing applications for Part II was Aug. 15 Sec. Dr Harold A Sofield 122 South Michigan Ave Chicago 3 Illinois

AMERICAN BOARD OF OTOLARYNGOLOGY New York City Sept. 13-17 Richmond Va March 6-10 1955 Sec Dr Dean M Lierle University Hospital Iowa City

AMERICAN BOARD OF PATHOLOGY Miami Nov 29-30-Dec. 1 Sec Dr William B Wartman 303 E Chicago Ave Chicago 11

AMERICAN BOARD OF PEDIATRICS *Oral* Chicago Oct. 8-10 and New Haven Dec 3-5 Ex. Sec. Dr John McK. Mitchell 6 Cushman Road Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION *Oral and Written* Washington D C., Sept. 5-6 Final date for filing applications was March 31 Sec Dr Earl C Elkins 30 N Michigan Ave Chicago

AMERICAN BOARD OF PLASTIC SURGERY Atlanta Ga., Oct. 20-22. Final date for filing case reports was June 1 Final date for filing case reports for spring 1955 examination is Jan 1 Corres Sec Miss Estelle E Hillerich 4647 Pershing Ave., St. Louis 8

AMERICAN BOARD OF PREVENTIVE MEDICINE *Parts I and II* Buffalo Oct. 9-11 Final date for filing applications was July 15 Sec., Dr Ernest L Stebbins 615 N Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY *Part II* Philadelphia Sept. 25-26 *Examination in Proctology and Anorectal Surgery* Sec Dr Stuart T Ross 131 Fulton Ave., Hempstead New York.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY New York, Dec. 13-14 New Orleans Feb 28-March 1 1955 San Francisco Mid-October 1955 New York City December 1955 Sec., Dr David A. Boyd 102 110 Second Ave SW Rochester Minnesota.

AMERICAN BOARD OF SURGERY *Part I* Oct. 25 March 31 and Oct. 27 1954 *Part II* New York, Oct. 12-13 Chicago Nov 9-10 St. Louis Dec. 14-15 Los Angeles Jan. 11-12 Galveston Jan 15-16 Washington Feb 8-9 Cincinnati March 8-9 New Orleans April 12-13 Philadelphia May 10-11 and Boston June 1-15 Sec., Dr John B Fluck 225 S 15th St., Philadelphia 2

DEATHS

Crumbine, Samuel Jay, Jackson Heights, N Y, born in Emlenton Pa Sept 17, 1862 Cincinnati College of Medicine and Surgery 1889 member of the Kansas State Board of Health from 1898 to 1904 then secretary and executive officer until 1923, his methods for protecting the health of the people of Kansas attracted nation-wide interest through his crusade, the common drinking cup was abolished from public places by the Kansas state legislature and later he put the common roller towel out of use, responsible for national health campaigns based on slogans like "Swat That Fly," "Don't Spit on the Sidewalk," and "Sleep with Your Windows Open," for many years dean of the University of Kansas School of Medicine, Lawrence-Kansas City, where he was professor of preventive medicine, while in Topeka he was a member of the House of Delegates of the American Medical Association, serving in 1921, on Dec 3, 1908, was elected the first president of the newly organized Kansas Society for the Study and Prevention of Tuberculosis, past president of the Association of Food, Dairy, and Drug Officials of the United States in 1914 president of the Conference of State and Provincial Health Authorities of North America and in 1925 appointed field secretary in 1923 became director of state relations and in 1925 general director of the American Child Health Association and established a six year program for the relief and rehabilitation of Puerto Rican children, the state of Kansas in 1943 honored him when the Crumbine plaque was unveiled in the Topeka Hall of Fame, a "Dr Crumbine Week" was officially declared throughout Kansas, and the Missouri Pacific Railroad, the first railroad to abolish the "common drinking cup," sponsored a publicity campaign throughout 11 states designating July as "Dr Crumbine Month", in 1952 the Kansas Public Health Association established the Samuel J Crumbine award for meritorious service to public health, his autobiography is entitled "Frontier Doctor", died in New York Polyclinic Hospital July 12, aged 91, of postoperative pulmonary edema

Moorman, Lewis Jefferson ☉ Oklahoma City, born in Litchfield, Ky, Feb 9, 1875, Hospital College of Medicine, Louisville, 1901, professor emeritus of medicine at the University of Oklahoma School of Medicine, where he was dean from 1931 to 1935, specialist certified by the American Board of Internal Medicine, secretary-treasurer of the Oklahoma State Medical Association, of which he was president 1919-1920, honorary president for life, one of the founders, and for 29 years president of the Oklahoma County Health Association, assisted in the organization of the Oklahoma City Tuberculosis Society and was its first president in 1918, past president of the National Tuberculosis Association, Oklahoma Public Health Association, American Trudeau Society, Southern Tuberculosis Conference, and the Southern Medical Association, in 1935 was named to Oklahoma's Hall of Fame by the Oklahoma Memorial Hospital in recognition of his achievements in medicine, member of the House of Delegates of the American Medical Association in 1921, fellow of the American College of Physicians and the American Clinical and Climatological Association, of which he was at one time vice-president, honorary member of staff, St Anthony Hospital, affiliated with University, Wesley, and Mercy hospitals, formerly medical director and owner of the Farm Sanatorium, served as medical superintendent of the State University Hospital and Crippled Children's Hospital, editor-in-chief of the *Journal of the Oklahoma State Medical Association*, died Aug 2, aged 79, of cancer

Graves, Stuart ☉ Ramer, Ala, born in Boonville, N Y, Feb 6, 1879, Syracuse University College of Medicine, 1911, dean emeritus and professor emeritus of pathology at the University of Alabama School of Medicine in Tuscaloosa, where he was dean from 1928 to 1947, professor of pathology and bacteriology at the University of Louisville (Ky) School of Medicine from 1914 to 1928 and dean from 1922 to 1928, acting state health

officer of Alabama 1929-1930, fellow of the American College of Physicians, acting assistant surgeon for the U S Public Health Service from 1918 to 1922, and from 1920 to 1922 a member of the medical advisory committee of the Kentucky State Board of Charities and Corrections, formerly pathologist at the City Hospital in Louisville, Ky, received the LL D degree from University of Alabama in 1937, died in Blowing Rock, N C, July 14, aged 75

Cosgrove, Clair Peter ☉ Los Angeles, born in Dillon, Mont., Jan 15, 1904, Northwestern University Medical School, Chicago, 1931, member of the American Academy of General Practice, vice-president of the Los Angeles County Medical Association, first elected president of the Los Angeles County Chapter of the California Academy of General Practice, member of the Hollywood Academy of Medicine, Crenshaw Academy of Medicine, and past president and an active member of the Medical-Dental Veterans Association of Los Angeles, served during World War II, member of the staffs of the Crenshaw Hospital, Daniel Freeman Memorial Hospital, and the Methodist Hospital, where he died June 29, aged 50

Bishop, Eliot, Brooklyn, born in 1880, Dartmouth Medical School, Hanover, N H, 1904, specialist certified by the American Board of Obstetrics and Gynecology, past president of the Brooklyn Gynecological Society and the New York Obstetrical Society, a founder and past president of the Obstetrical and Gynecological Travel Club, attending gynecologist and obstetrician at Brooklyn Hospital, consulting obstetrician at Bay Ridge Hospital, Norwegian-Lutheran Deaconesses' Home and Hospital, and Methodist Hospital in Brooklyn, and at John T Mather Memorial Hospital in Port Jefferson, died in Portland, Maine, July 25, aged 74, of heart disease

Allen, Silas Gilbert ☉ Stanton, Neb, Omaha Medical College, 1901, affiliated with Lutheran Hospital and Our Lady of Lourdes Hospital, local surgeon of the Chicago and Northwestern Railroad, died in Norfolk July 6, aged 80, of cerebral hemorrhage

Appold, George Dewey ☉ Bergenfield, N J, Long Island College Hospital, Brooklyn, 1925, fellow of the International College of Surgeons and the American College of Surgeons, instructor of orthopedic surgery at the New York University College of Medicine, affiliated with Holy Name Hospital in Teaneck and the Englewood (N J) Hospital, died June 7, aged 55, of coronary thrombosis

Bach, Robert J, Milwaukee, Marquette University School of Medicine, Milwaukee, 1913, member of the National Gastroenterological Association, for many years surgeon for the U S Public Health Service, served as chief of staff of St Mary's Hospital, where he died June 5, aged 67, of pulmonary embolism

Barb, Kirk Bentley ☉ Camden, N J, University of Oklahoma School of Medicine, 1915, chief medical examiner in city public schools, died July 22, aged 68, of coronary occlusion

Bassett, Thomas Richard ☉ Mount Pleasant, Texas, Baylor University College of Medicine, Dallas, 1901, past president of the Titus County Medical Society, county health officer; died in Dallas April 19, aged 80, of arteriosclerosis

Callaway, James Willis ☉ LaJolla, Calif, Northwestern University Medical School, Chicago, 1932, specialist certified by the American Board of Internal Medicine, member of the National Gastroenterological Association, fellow of the American College of Physicians, served during World War II, affiliated with Scripps Memorial Hospital and Scripps Metabolic Clinic, where he died June 25, aged 46, of carcinoma of the pancreas

Canizaro, Vito Joseph ☉ Biloxi, Miss, Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia, Italy, 1935, served during World War II, died July 27, aged 47

Carswell, James Jr ☉ McKinney, Texas, University of Illinois College of Medicine, Chicago, 1928, clinical assistant professor of surgery at Southwestern Medical School of the University

of Texas, Dallas, specialist certified by the American Board of Thoracic Surgery, president of the Collin County Medical Society member of the American Trudeau Society, affiliated with the Veterans Administration Hospital, where he died July 9, aged 52, of septicemia.

Conzelmann, Fred John & Stockton, Calif., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905 specialist certified by the American Board of Psychiatry and Neurology, member of the American Psychiatric Association, veteran of the Spanish American War and World War I, for many years on the staff of the Stockton State Hospital, died June 26, aged 78, of angina pectoris

Culver, George Jacob & Au Sable Forks, N Y, Albany Medical College, 1914 for many years county coroner health officer, served during World War I, member of the staffs of the Champlain Valley and Physicians hospitals in Plattsburg; past president of the Rotary Club of Au Sable Forks, died July 4, aged 63, of intestinal hemorrhage

Cummin, John White & Boston, Harvard Medical School, Boston, 1896, fellow of the American College of Surgeons served on the faculty of his alma mater; formerly on the staff of the Massachusetts General Hospital, died at Phillips House July 16, aged 83

Doolittle, Sam Wade, Lancaster, Wis., Hospital College of Medicine, Louisville Ky., 1894, served overseas during World War I, died in the Madison (Wis.) General Hospital July 3, aged 83, of arteriosclerosis

Dorvas, Adam Peter & Philadelphia, Temple University School of Medicine, Philadelphia, 1915, served during World War I, associated with Skin and Cancer Hospital for many years, died in Temple University Hospital July 21, aged 64

Douglas, Thomas Harrelson Jr & Camarillo, Calif., Washington University School of Medicine, St. Louis, 1939, member of the Missouri State Medical Association, died July 5, aged 41

Duncan, Frederick Ransom, Waldron, Ark., Memphis (Tenn.) Hospital Medical College, 1903, died in St. Edward's Hospital, Fort Smith, May 14, aged 78, of congestive heart failure

Essick, Charles Rhein & Reading Pa., Johns Hopkins University School of Medicine, Baltimore, 1909, member of the American Association of Anatomists, served as director of the Pennsylvania Tuberculosis Society, as president of the Reading Tuberculosis Association, and as vice president of the board of the Guidance Institute of Berks County, which he helped to establish, died June 26, aged 71

Frank, Paul George & Kew Gardens, N Y, Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1897, on the staff of the Harlem Hospital New York City, died in Wickersham Hospital, New York City, April 18, aged 80, of heart disease

Freed, Cecil Forest & Reading, Pa., University of Pennsylvania School of Medicine, Philadelphia, 1920, fellow of the American College of Surgeons, on the staff of the Reading Hospital, died June 13, aged 60

Freymann, Walter & West New York N J Friedrich-Wilhelms Universität Medizinische Fakultät, Berlin Prussia, 1920 member of the National Gastroenterological Association, died July 5 aged 61

Gill, James Pope & San Antonio, Texas, Vanderbilt University School of Medicine Nashville, Tenn. 1926 captain in the regular Army until 1931 served during World War II member of the county health board affiliated with Santa Rosa Infirmary died April 4 aged 54, of chronic myocarditis and cerebral thrombosis.

Gore, George Walton, Goreville Ill. St. Louis College of Physicians and Surgeons, 1905 died in Herrin (Ill.) Hospital July 8, aged 80 of acute congestive heart failure

Hagen, William Andrew & Muskegon Mich. Grand Rapids Medical College 1902 died June 21 aged 77, of a heart attack.

Honeycutt, Joseph B., Waco Texas University of Louisville (Ky.) Medical Department 1897, died June 15 aged 85

Hubley, Benjamin Frank, Norristown, Pa., Medico-Chirurgical College of Philadelphia, 1891, died in Montgomery Hospital June 5, aged 85

Johnston, Walter Scott, Hemet, Calif., Homeopathic Medical College of Missouri, St. Louis, 1908, formerly associated with the Indian Service, died July 1, aged 76

Kas, Thomas D & Sutherland, Iowa, Wisconsin College of Physicians and Surgeons, Milwaukee, 1909, at one time secretary of the Iowa State Department of Health served during World War I, on the staff of the Sioux Valley Memorial Hospital, died July 19, aged 71, of cerebral hemorrhage

Larkin, Henry Watson & Guthrie, Okla., University of Oklahoma School of Medicine, Oklahoma City, 1920 formerly superintendent of the Oklahoma Methodist Hospital, died July 10, aged 84, of pneumonia

Maguire, Elliott Francis & Philadelphia, University of Pennsylvania School of Medicine, Philadelphia, 1943, specialist certified by the American Board of Internal Medicine, served during World War II, died July 18, aged 39

Meador, Clarence Nelson & Corpus Christi, Texas, Northwestern University Medical School Chicago, 1917, from 1917 to 1922 a lieutenant in the regular Navy, in 1927 health officer of Caddo County, Okla., president of the Fred Roberts Memorial Hospital staff in 1938, died April 17, aged 64, of coronary occlusion

Monroe, Alfred E & Kansas City, Mo., Maroon-Sims College of Medicine, St. Louis, 1893, died in the Bothwell Hospital, Sedalia, June 30, aged 84, of cerebral hemorrhage

Nicoll, David T & Bronxville, N Y Hering Medical College, Chicago, Homeopathic, 1903 member of the Kansas Medical Society, practiced in Topeka, Kan., for many years, died July 12, aged 90

Noonan, William Joseph & Minneapolis, School of Medicine of the Division of Biological Sciences, University of Chicago, 1935 specialist certified by the American Board of Urology, clinical assistant professor of surgery (urology) University of Minnesota Medical School, served during World War II, died July 21, aged 44

Olsen, Xenophon & San Bernardino, Calif., University Medical College of Kansas City, Mo., 1900 an Associate Fellow of the American Medical Association, died in St. Bernardine's Hospital July 13, aged 82, of myocardial infarction.

Pearce, Charles E., Knoxville, Tenn., (licensed in Tennessee in 1903) died in the Knoxville General Hospital July 8, aged 79, of arteriosclerotic heart disease

Raphael, Isidor J & Evansville, Ind., Rush Medical College Chicago, 1923, served during World War II, died in St. Mary's Hospital July 4, aged 56, of acute monocytic leukemia

Roby, Joseph & Rochester, N Y, Columbia University College of Physicians and Surgeons, New York, 1896 for many years deputy health officer; served on the board of Rochester General Hospital where he was for many years chief of medical staff died in the Strong Memorial Hospital July 15, aged 82

Samuel, Ira Jay & Altoona Ala. University of Nashville (Tenn.) Medical Department, 1908 city health officer died July 23, aged 72 of injuries received in an automobile accident

Shelby, Hudson Swain & Oklahoma City, Okla. University of Oklahoma School of Medicine, Oklahoma City, 1933, died July 14 aged 53, of coronary occlusion

Tuttle, Ralph Wear & Wolfeboro N H Harvard Medical School Boston 1909 member of the New England Obstetrical and Gynecological Society past president and vice president of the New Hampshire Medical Society for two terms president of the Carson County Medical Society, chief of staff at the Huggins Hospital where he died July 5, aged 72, of pneumonia

Woodburn, Stillman Philetus & Millers Falls Mass. Long Island College Hospital, Brooklyn 1887, for many years school physician affiliated with Farren Memorial Hospital in Montague City and Franklin County Public Health Department in Greenfield died in Hadley June 12 aged 96

FOREIGN LETTERS

AUSTRIA

Acute Myocardial Infarction—At the May 28 meeting of the Society of Physicians of Vienna, Dr O Zimmermann of Meinzigen reviewed 356 cases of myocardial infarction observed during the years 1948 to 1953. Of these 73.4% were men. The ages of patients ranged from 30 to 91 years. Of the men 67.6% were less than 65 years old and 32.4% were 65 or over, but of the women only 36.1% were less than 65 years old and 63.9% were 65 or over. The total mortality was 46.6%. The mortality among patients less than 65 years old was 30% in men and 48.5% in women. Among the patients of 65 or over the mortality of men was 60.7% and of women, 77.7%. Anginal attacks or symptoms had existed in some patients for 21 years. Nearly 25% of the patients had had such difficulties for over two years, and 14.6% for between three months and two years. In nearly 25%, anginal attacks had been present for less than two months or for a few days before the infarct occurred, 14% had been free from symptoms previous to the infarct, in 7.5% infarction was without symptoms, and in 5% no history was available. In 14% the history indicated that the infarct represented a relapse.

The belief that myocardial infarction is a disease of executives is no longer held. Syphilis, which was found in 2% of the men and 1% of the women, plays a very subordinate role in acute myocardial infarction. Hypertension, however, which was observed in 22% of the men and in 48% of the women, is important and is chiefly responsible for the increased mortality in women, generally speaking, it makes the prognosis of acute myocardial infarction much more unfavorable. The role of diabetes, which was present in 2.7% of the men and 3% of the women (in America 10% and 17%), is much less important, but acute coma or excessive insulin dosage can become dangerous in these patients. A history of excessive use of tobacco was elicited in 40% of the men and 6% of the women. Eleven per cent of the men and 1% of the women were in executive positions. This fact, together with the relatively high percentage of women with myocardial infarction, militates against the concept that this is chiefly a disease of executives. The importance of all factors that favor a neurocirculatory dystonia has been repeatedly emphasized by Zimmermann over the last 20 years. The incidence of myocardial infarction has rapidly increased in younger persons on the basis of a hypersensitive sympathetic nervous system and also, frequently, as the result of the earlier appearance of manifestations of a wearing-out of the coronary arteries, in older patients the incidence, however, parallels the increase in the aging process as the manifestation of the simultaneously increasing severity of coronary sclerosis. Sympathetic factors are of much less importance in this older group.

In men infarcts of the anterior and posterior wall were of equal frequency, in women, however, there were 20% more infarcts of the posterior than of the anterior wall. The mortality was 25% less in men with infarcts of the posterior wall only. At autopsy infarcts of the septum were found in about 13% of the cases, they never occurred alone. A pure supra-apical or lateral infarct was never observed at autopsy. Old indurations were observed with new infarcts in 58.4% of the cases. Severe coronary sclerosis and stenosis without thrombosis or embolism were observed in 33.5% of the cases of infarction seen at autopsy. In three-fourths of all cases severe coronary sclerosis was seen at autopsy, in the remaining one-fourth, only slight sclerosis. The coronary arteries were free of sclerosis throughout in seven cases.

The concept "threatening infarct" is regarded as doubtful. The short duration of previous anginal complaints in many patients and, on the other hand, their existence for many years,

the fact that anginal disturbances may completely disappear at advanced ages, and the occurrence of the suddenly appearing and the silent infarct render this concept extremely vague, and thus there is no sure means of preventing infarction. In 83.5% of the patients the electrocardiographic diagnosis was in complete agreement with the clinical and postmortem aspects, and chest leads clarified the diagnosis in only 1.3%. Of the cases discovered at autopsy 11.2% were not explained by electrocardiography, in 5.3% no electrocardiographic records were available, because death was so sudden or a silent infarct occurred in comatose patients after an earlier electrocardiographic examination. The unexplained 11.2% showed severe atypical electrocardiographic records such as bundle branch block and arborization block.

Although the importance of chest wall leads has been amply demonstrated, their interpretation is not easy. They show significant diagnostic features in patients with infarction of the anterior wall, but in those with infarction of the posterior wall the findings are not so consistent. In supra-apical infarcts characteristic Wilson leads may furnish definite proof with almost normal or completely normal standard leads. Mild pathological changes that are only suggestive, however, often do not permit a definite diagnosis of infarction even with Wilson leads. The electrocardiographic diagnosis of the isolated lateral infarct is very difficult and unreliable even with chest wall leads. A chest wall lead from the left rim of the sternum and from the apical beat is usually adequate. The electrocardiogram does not permit a reliable conclusion as to the severity of the individual lesion, and even less a prognosis or an indication of the best treatment to be used. The age of the infarct likewise cannot be ascertained by the electrocardiogram after the first changes have subsided. Even a myocardial scar that has been present for years may give the impression of a relatively recent myocardial infarct.

DENMARK

The Health of Greenland.—Such profound changes have recently occurred in Greenland that in 1948 government authorities in Denmark appointed a commission to discuss and plan a sweeping reorganization in every field. In 1950 the findings of this commission were dealt with by the Danish Rigsdag, which adopted legislation affecting social, economic, political, judicial, cultural, and administrative conditions. Reviewing these laws, Dr Mogens Fog-Poulsen explains in *Ugeskrift for læger* for July 29, 1954, how they function with regard to public health. With an area 50 times greater than that of Denmark, Greenland had a population at the end of 1952 of only 23,469 native Greenlanders and 1,267 settlers from Denmark. The original Greenlanders were Eskimos, descendants from North American nomads. The Greenlanders of today are a mixture of Eskimos and North Europeans. While seals and small whales were formerly the main source of food, the teeming waters round the coast have now done much to convert the Greenlanders from hunting to fishing. The new public health law of May 1, 1951, deals with 13 different medical districts, each with a hospital of its own. In 1952 there were, altogether, 411 hospital beds, which in that year accommodated 3,441 patients. There were also 70 beds in three children's sanatoriums dealing with surgical tuberculosis in children between the ages of 2 and 14 years. A tuberculosis sanatorium with 211 beds is to be opened in November, 1954. In addition to the hospitals provided with a drug department there are some 100 depots of drugs and dressings in different parts of Greenland. Drugs not requiring a physician's prescription can also be bought in any of 66 shops.

ENGLAND

Nursing Homes—An annotation in the *British Medical Journal* of June 12, 1954 describes the changes in the nursing homes of London in the past two decades. At the end of 1937, 170 homes were registered. Evacuation, damage by enemy action, shortage of staff, and other difficulties reduced the number of active homes to 108 in 1945, and the homes that survived the war had great difficulty in maintaining their standards. The replacement of equipment (particularly linen), rationing, and the shortage of skilled staff had to be surmounted during the difficult war years and most nursing homes were then faced with heavy expenditure for repairs and redecoration in the immediate postwar years. This alone was often enough to discourage the owners of the smaller home from continuing. In addition the prewar nurses' salary of from \$168 to \$252 a year had by 1953 increased to \$980 plus an allowance for living out. It was not surprising, therefore, that between 1947 and 1953 there was a further drop in the number of nursing homes from 63 to 48. This drop of 24% in the number of homes in London since the National Health Service began, when measured in number of beds available, shows a decrease of 9.4%. During this same period, 19 new homes were registered, but 34 were closed.

Rising costs have alarmed the users as well as the owners of nursing homes. Accommodations that before the war cost from \$14.70 to \$23.50 a week, with a maximum of about \$35, today cost \$32 to \$70 a week—not a disproportionate increase when compared with rises in costs. Fees of this magnitude, which may be borne for a short period by the acutely ill, are an impossible burden on elderly patients with small, fixed incomes. In many cases, the expense is met for a time out of capital or by relatives or friends. This is one of the main reasons why the number of empty beds in nursing homes has increased. There are still some small homes with 6 to 10 beds charging about \$17.50 upward, but at such a figure and with present-day prices no more than the bare minimum of nursing staff can be provided, and the food can hardly be of the highest quality. Homes of this type appear to be on the border of solvency and are not likely to survive. On the other hand, a few homes charge as much as \$102 a week. These homes are in constant use by physicians and surgeons of high standing, and the professional skill and care are matched by a service similar to that of a luxury hotel.

The introduction of the National Health Service came at a time when the falling birth rate caused a reduction in the admissions to maternity beds in nursing homes, and it coincided with a period when maternity wards were being expanded in the hospitals. The number of confinements taking place in nursing homes in London was 3,167 in 1947, in 1952 this number had fallen to 1,091. This large drop cannot be wholly accounted for by the fall in the birth rate from the exceptionally high figure of 20.9 per 1,000 population in 1947 to 15.3 in 1952. Recent annual reports of the medical officers of health of other large cities show the same trend. Most homes found that in the postwar years less use was being made of their operating rooms and more beds were being used for medical cases, particularly for the treatment of the chronically sick or senile patients.

State registered nurses are not as a rule eager to work in private nursing homes, and the comparatively uneventful nursing of the chronically sick does not greatly attract them. It is the state-enrolled assistant nurses or the older women trained, but without state registration, who nurse such patients. The organization of comprehensive home nursing and home help services under the local health authority and the establishment of old persons' homes under welfare provisions while in no sense a replacement of the private nursing home have added to the facilities available and undoubtedly had some effect in reducing the numbers of persons who might have gone into a private home. The borderline between what constitutes nursing of the sick and caring for the old and enfeebled is ill defined. Establishments that provide care for the aged by ordinary unskilled staff fill a real need, and there are good reasons why

some of the smaller nursing homes should turn their attention to this type of person who so often fails to find the accommodations he or she is seeking.

Reducing Waiting-Time of Outpatients.—Hospital authorities throughout England and Wales have been asked by the Minister of Health to review the working of outpatient departments in order to remove all reasonable causes of complaint. Matters that he thinks call for special attention are appointments systems, punctuality of staff, and reception of patients. While much public criticism may well arise from lack of an adequate appreciation of the difficulties involved, the complaints made have been so widespread that they suggest that at a number of hospitals the suggestions previously made with regard to reducing the waiting time of outpatients either have not been put into effect or are not being successfully applied. The main points of criticism are that (1) patients called for an appointment at a particular time frequently have to wait for an hour or more before they are seen by the physician, (2) the consultants in charge of clinics often arrive late, (3) appointment systems are badly organized, and (4) little attempt is made to explain to patients the reason for delays, to win their confidence, or to consider their comfort or needs.

The minister believes that appointment systems should not only be universal but designed to ensure, as far as possible, that each patient is scheduled to arrive at the time he is expected to see the physician. The old practice of "multiple" or "block" bookings should be discontinued. The needs of parents with small children at home and of patients coming from a distance by infrequent buses or train also clearly call for separate consideration. It should be impressed on consultants that the success of the appointment system depends on their being present on time and an administrative officer of adequate seniority should be made responsible for the efficient running of the appointment system. The minister urges special care in selecting the staff responsible for receiving patients and suggests that they should remember that patients are often anxious, bewildered, or even frightened and that it is essential to attend to their needs and comfort. Much criticism could be avoided by developing better relations with patients and with the public at large. A helpful and kindly approach to outpatients by receptionists and other staff members is only one example of this. Much more could be done to interest the public in the work of the hospitals, the difficulties with which they have to contend, and the steps being taken to overcome them.

On the other hand many patients arrive late or fail to keep the appointment made for them. One general hospital in a period of five weeks found that 10% of patients failed to come and that often the consultant was left waiting. There are several reasons for this casual and thoughtless behavior, the effects of which could have been prevented if the patient had notified the hospital of his intention not to attend. The chief reason is probably that, in the intervening time from the making of the appointment, the patient improved and decided it not worth while to come. Another reason is forgetfulness, and another is that the general practitioner perhaps need not have referred the patient to the hospital. Again another is that instructions as to the appointment were not made sufficiently clear. Finally, it not infrequently happens that in the intervening period the patient has died, nobody thinks of telling the hospital.

Medical Administration—Dr D. F. Hutchinson delivered the presidential address on medical administration to the metropolitan counties branch of the British Medical Association, and it is quoted in the *British Medical Journal* of June 12. After surveying the past and the development of the hospital superintendent, he said that, since 1911 when the National Health Insurance scheme started the general medical services became for the first time subject to a certain amount of government control and that local medical and panel committees were formed to look after the interests of the medical profession in this new situation. Yet in the whole course of National Health Insurance scheme only one such committee that of London, found it necessary to appoint a full-time secretary. As the welfare state grew however there was more and more scope for the medical administrator.

According to a recent survey, 690 physicians in this country were in the government service, a certain number of these were

doing clinical work but most were administrators. Looking at other categories he was surprised to find that 144 physicians were doing administrative work in medical organizations (11 in the British Medical Association secretariat). In the hospital field there was a great difference between the clinical and the administrative outlook. In Scotland, there was a general belief, which he shared, that a hospital should be administered by a physician.

In the general medical services of the country there is undoubtedly now much greater need for the medical administrator than in the past. Most of the 20,000 physicians running the general medical services had neither the time nor the inclination to look after all the "paper work" or to learn the answers to all the curious questions that were raised. In London and Middlesex it had been necessary to appoint full-time secretaries to the local medical committees, their primary job is to advise their colleagues, many of whom are excellent physicians and who yet sometimes show astonishing ignorance of the regulations. Another important part of their work is to maintain liaison with local health authority and hospital services. In other fields, as apart from the clinical work of the physician, are officials such as the secretaries of medical defense societies and members of the editorial staffs of medical journals.

Dr. Hutchinson concluded that it is essential for the medical administrator to have a sound clinical background. He should always be prepared to answer any question, even if only to refer the inquirer to some other source of information. Medical administrators must be careful to avoid any air of superiority, and they must have competent lay assistants, otherwise they will be bogged down by detail.

Recovery Homes—Established as a half-way house between hospital and convalescent home for patients no longer in need of full hospital treatment but not ready for discharge, recovery homes can (1) secure a quicker turnover of beds in busy hospitals, (2) reduce hospital waiting lists, and (3) reduce maintenance costs per patient by up to two-thirds. They are receiving much attention from hospital authorities. The report of an inquiry made by King Edward's Hospital Fund says that all hospitals that have such homes are enthusiastic as to their value. Recent developments in antibiotics have made these homes increasingly important. With the risk of sepsis after operations almost eliminated, many patients no longer require full hospital facilities, although they may still be unfit to go to a convalescent home or to return home. In several cases, a converted country house was found to be the most suitable building for a recovery home. It remains under the supervision of the parent hospital. The average stay in the recovery homes survey was 13.4 days. The cost of treatment in a recovery home varies between 37 and 57% of the cost of a bed in a hospital. The cost of adapting a suitable country house is much less than that of building additional hospital wards.

New Mental Deficiency Hospital—The Minister of Health laid the foundation stone of Greaves Hall, near Southport, in May. It is the first large hospital to be started in England and Wales since before the war, and it will be used for mentally defective patients. Its estimated cost is about \$8,400,000, and it will provide beds for over 1,000 patients. The minister said that more than 2,500 new hospital beds for mentally defective patients are to be provided from centrally financed schemes in the next two years, but new building is not the only way in which it is hoped to improve the mental health services. The services provided by local health authorities for mentally defective persons living at home are of great importance and have increased greatly in the last few years. Although in recent years nursing recruitment has made great strides, the mental hospitals lagged behind the general advance and are still very short of nursing staff. It is not yet sufficiently well known that the whole atmosphere of the mental hospitals has been revolutionized by modern methods of care and treatment and that these branches of the nursing profession now offer a career with interesting work and excellent prospects.

Birthday Honors—It is customary on the occasion of the Queen's official birthday for her to confer honors, and it is usual for physicians and others connected with medicine to be included in the list. Among those whose services have been recognized

is Mr. Alfred Chester Beatty, who has received a knighthood. As an American who became a naturalized Briton, he has been a great benefactor to medicine. In 1937 he bought the old Freemason's Hospital in Fulham and presented it to the Royal Cancer Hospital to house the well-known Chester Beatty Research Institute. Mr. Somerset Maugham, the author, was admitted as a companion of honor. He qualified as a physician nearly 60 years ago. A baronetcy was conferred on Sir Russell Brain, the president of the Royal College of Physicians of London, and a knighthood on Mr. R. C. Brock, known throughout the world for his contributions to the surgery of the heart.

Shortage of Dental Students—Dentists are so concerned by the small number of applicants for training in the dental schools that they have asked the Minister of Health to sponsor a national survey. It is maintained that, if recruitment continues at its present slow rate, there will not be enough dentists to provide a proper public service in about 10 years. At present, there are about 15,000 dentists on the register, but about 3,000 of these may not be practicing. It is suggested that a national committee seek out ways of inducing more young persons to take up dentistry. One main reason for the shortage is the fact that medicine attracts much the same type of student and that in most cases a medical career is first choice, since dentistry has not the same glamor and, in the minds of the public, a lower social standing.

Patients Referred by Dentists for Penicillin Injections—The *British Medical Journal* says that the British Dental Association has sent the following letter to its branches and local dental committees: "The British Medical Association has told us that difficulties have arisen in parts of the country where some dental practitioners have referred patients to doctors for penicillin injections. The doctor is sometimes placed in an awkward position in dental cases of this kind if he decides that risks of sensitization and bacteriological resistance preclude the use of penicillin on a particular patient. The British Medical Association has accordingly asked that any dentist referring a patient to a doctor for this treatment should make his request to the doctor in writing and should not give any details to the patient."

Mobile Hospital Teams for Major Accidents—The Ministry of Health has notified all local health authorities of arrangements that are being made for certain hospitals in all areas to be ready to send mobile medical teams to the scene of major civil accidents involving large numbers of casualties. It will be the function of the ambulance service to call on the most appropriate hospital. The ambulance service will be kept informed by hospitals of the number of beds remaining available for casualties. If it is necessary to call on more distant "support" hospitals, the hospital medical officer in charge of a mobile team will keep the ambulance service informed as to which of the hospitals should receive casualties. Mobile teams from hospitals will bring their own surgical and medical equipment.

FRANCE

A Dangerous Remedy—At the hospital of Tours, M. Rauzand and J. Lutier treated a 31-year-old woman suffering from severe headache. On admission they found no abnormal meningeal or ocular signs. After several days a transitory amaurosis and a syncopal state developed, marked mental clouding occurred, the pulse rate dropped to 50, and Babinski's sign was seen on the left. The patient was transferred to the neurological service of Professor Guillaume in Paris. Ventriculography suggested a frontal lobe abscess. An exploratory operation revealed neither pus nor induration, but the cerebrum was edematous. On the following day it was learned that the patient had had a boil for which she had been given pills containing an organic stannous salt and vitamin F. She had taken 29 of these in six days. Many deaths have been reported in France in patients with syndromes suggesting acute encephalitis either from abscesses or from brain tumors and in whom the autopsy showed a cerebromeningeal edema. These patients had complained of severe headaches and mental clouding. Investigations by the board of health have shown that these patients were given pills containing the organic stannous salt. Inorganic stannous salts have been used for a long

time in treating boils without provoking intoxication. Many hypotheses are evoked concerning the toxicity of the organic iodic stannous salt (generally not toxic) used in the lethal preparation. According to one of these, the formation of stannous tetraethyl, in some cases, might be the cause of death.

Cancer of the Breast—Considering the diversity of cancer of the breast and the necessity of varying the treatment according to the different types of tumor, P. F. Denol has studied records of 5,931 patients with cancer of the breast. He classifies cancer of the breast in the following groups: 1. A localized form of cancer found within the limits of the breast, originating without any invasion of the local lymph nodes—this may be the only form for which an operation can surely cure the disease, but even in this form, operation may result in metastatic generalization. This form develops through steps characterized by peritumoral edema, a definitely palpable tumor, and growth of the tumor. This type of tumor should not be operated on during its early development because this may result in the development of a more serious form. 2. A localized form extending beyond breast tissue—this spreads steadily and quickly but without invading the tributary lymph nodes. 3. A lymphatic form—this at the outset is accompanied by histologically demonstrable invasion of the local lymph nodes. 4. A diffuse form—this at the time of the first examination is found to have metastasized. The clinical manifestations of disseminated metastases may even occur before those of the initial tumor, for this form the treatment must be general instead of local. Cancers of the first three forms are of two kinds, those sensitive to androgens and those sensitive to estrogens.

Treatment of the Dangerous Alcoholic—On April 15, 1954, the National Assembly passed a law in regard to the dangerous alcoholic. Any alcoholic dangerous to himself or others may be reported to the sanitary authority, which will investigate his family, professional, and social life and have him medically examined. If it is safe to release him he will be placed under the care of a social worker or a reliable antialcoholic society. If he cannot be released he may be summoned to appear before the civil court, which may send him to some center for the rehabilitation of alcoholics. In the next two years some centers of this type are to be built. An alcoholic may be sent to such a center for six months. This may be extended for another six months if necessary. An alcoholic may, however, be released sooner with the approval of the chief physician of the center. The patient may ask to appear before the court to plead for his release. When he leaves the center he is kept on probation for one year under the care of a social worker. The patient who escapes from the preliminary medical examination is liable to a fine of 200 to 1,000 francs. In case of a relapse the alcoholic will be imprisoned for eight days. The same penalties are applicable to patients who leave the center without authorization. Special arrangements are provided for dangerous alcoholics suffering from mental disorders.

Cancer of the Esophagus—In *Les échos de la médecine* of June 15, 1954, A. Morice of Caen reviewed the records of 50 patients with cancer of the esophagus, 30 of whom were heavy drinkers of cider brandy. The patients were seen so late in the course of the disease that only seven could be operated on. Two of these died within a few days after operation. Of the other five, only one was still alive, two died of delirium tremens, one of alcoholic coma, and one of hepatic cirrhosis.

TURKEY

Reticuloendothelial Histiocytosis—In *Klinik* (vol 11 no 10) Dr. Ziya Tanan described two patients with acute malignant reticuloendothelial histiocytosis. For two months the first patient, a 30-year-old woman, had loss of appetite, a bitter taste, weakness, swelling and bleeding of gums, nausea, vomiting, and an intermittently elevated temperature. Examination on admission revealed an inorganic cardiac souffle, a slightly swollen abdomen, and a tender epigastrium. The temperature was 101.3 F, pulse rate 105 per minute, and blood pressure 140/80 mm Hg.

The erythrocyte count was one million per cubic millimeter, hemoglobin level 35% of normal, and leukocyte count 10,000 per cubic millimeter, with 74% histiocytes, 8% large monocytes, 6% lymphocytes, 5% monocytes, 4% polymorphonuclear neutrophils, and 3% plasmacytes. Although the sternal puncture did not reveal a myeloid reaction, it showed an abundance of histiocytes, megakaryocyte-like multiform nuclei, and giant phagocytes. The sedimentation rate was 40. The coagulation time was 5 minutes and the bleeding time 2.5 minutes. After 10 days the erythrocyte count was 600,000 per cubic millimeter, the hemoglobin level 30% of normal, and the leukocyte count 37,000 per cubic millimeter. The patient was given two blood transfusions of 500 cc each, and after two days the erythrocyte count was 2,600,000 and the leukocyte count 25,000 per cubic millimeter. Intermittent fever continued. The patient was given liver extract, vitamins, and cardiac tonics. Her vomiting ceased, but her chest pain and feeling of faintness soon returned. After another 10 days the erythrocyte count was 1,200,000 per cubic millimeter, the hemoglobin level 30% of normal, and the leukocyte count 30,000 per cubic millimeter. The patient's condition deteriorated, and after two more blood transfusions she died, three months after the onset of the disease.

The second patient was a 50-year-old man who complained of weakness, pain in the back, swelling of the abdomen, intermittent chills, and fever. Examination revealed an enlarged liver. The spleen had descended below the umbilicus. He had cervical and inguinal lymphadenopathy. His temperature was 100.4 F, and his pulse rate was 100 per minute. His erythrocyte count was 3,100,000 per cubic millimeter, hemoglobin level 70% of normal, and leukocyte count 5,000 per cubic millimeter, with 58% histiocytes, 30% polymorphonuclear neutrophils, 6% monocytes, 5% lymphocytes, and 1% eosinophils. The splenogram did not show parasites, but there were 30 to 40 histiocyte-like giant phagocytes in every field. Sternal puncture revealed an absence of myeloid cells and the presence of an enormous number of destroyed cells. The sedimentation rate was 85, the coagulation time was 5 to 10 minutes, and the bleeding time was 1.5 minutes. Although the patient was given blood transfusions and palliatives, he died four months later.

Curettage Eliminates Chorioepithelioma—In *Dirim* (vol 29, no 4) Dr. Tarık Maktav reported on the beneficial effect of curettage in a patient with chorioepithelioma. A 20-year-old woman was referred to the hospital because of imminent septic abortion. Her temperature was 102.9 F and her pulse rate was 120 per minute. After treatment the hemorrhage ceased and the patient was discharged. Curettage was performed later. As the material had the characteristics of retained products of conception, and as macroscopic examination did not show evidence of a hydatid mole, a histological examination was not performed. When follow-up revealed that slight bleeding continued and there were signs of anemia, the probability of a mole or chorioepithelioma was considered. Another curettage was performed, and the scrapings were sent to the Istanbul University Cancer Institute, where a diagnosis of chorioepithelioma was made. The patient, who had been discharged, reported that she was feeling fine, but she was readmitted two weeks later and another curettage was performed. This time the scrapings submitted to the Cancer Institute showed only endometrium, thus confirming the beneficial effect of curettage on chorioepithelioma that was the result of abortion.

Irradiation of the Nasopharynx—In Turkey the Crowe sound was first used in 1947 by Dr. Arhan Toros of Istanbul, and he has used it in treating 105 of his patients with good results. In *Dirim* (vol 26 no 8) Prof. Nüzhet Atav and Dr. Emin Burad reported on their experience with irradiation therapy by the Crowe method in 50 children 10 to 15 years old who had lymphoid nasopharyngeal hypertrophy. The chance for audiometric improvement was better when the therapy was given in the early stages of the condition and with a larger dose. The therapy consisted of introducing 50 mg. of radium through a Monel metal tube for 12 minutes every two weeks. Each patient was given three such treatments. Audiometric amelioration was 56%, subjective amelioration was 65%, and general amelioration was 82%. Untoward side-effects were not observed.

CORRESPONDENCE

SOCIAL SECURITY FOR PHYSICIANS

To the Editor—Permit me to extend my views on an article in the Washington News of the July 10, 1954, issue of THE JOURNAL.

The disciples of Oscar Ewing are again attempting to strangle the medical men of the nation. They could not get in the front door so now they are trying to sneak in through the cellar door. The Socialist planners are the only ones, so they think, who know (1) how you should live, and (2) earn your living, and (3) spend your money, and now even (4) save your money for your old age!

Social Security is neither social nor is it security. It is another form of income tax, and concealed behind its deceptive label is one of the most nauseating schemes forced down the throats of the American public. It has already enslaved millions of our people and is insidiously changing them into fawning vassals of the all-powerful State. Compulsory coverage, old age and survivors insurance is a brazen violation of the privacy of American citizens. It certainly smacks of a peculiar and somewhat naïve philosophy of life. Do its proponents think they are speaking to irresponsible teenagers who have yet to learn what sacrifice, hard work, self-denial, and thrift mean? Any person who has the intelligence and ability to earn a living and make his own way through life certainly possesses and can utilize that same wisdom in managing his own personal affairs.

At a very early age in life wise parents begin to teach their children to work hard while they are young and to save their money for their old age and for any emergencies, so that they can enjoy the fruits of their labor. Every self-respecting human does not relish the thought of having to go to the government with his hand out, waiting for the bureaucrats to dole out to him his own hard-earned money. Mrs. Hobby, according to THE JOURNAL, very strongly favors compulsory coverage for physicians and other self-employed—and I very strongly favor that the above lady "mind her own business and tend to her knittin'." My husband, who is a physician, and I are extremely capable of protecting ourselves for our old age and insuring our family without any help from the federal bureaucrats.

Here, indeed, is an issue with a vital challenge to all freedom-loving souls, and every physician worthy of the name should arise with righteous indignation to beat back this social security plan, which is nothing but a hideous subterfuge to force them and other self-employed to support or subsidize a bankrupt plan. Here, too, is where the Women's Auxiliary should play a tremendously vigorous part. After all, we are our husband's partners. May I urge the American Medical Association to continue its forthright and courageous stand to keep our men, and itself, free from any stranglehold by the government.

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APLASTIC ANEMIA AND CARBON TETRACHLORIDE

To the Editor—THE JOURNAL (155:737 [June 19] 1954) published an article by Bernard Straus entitled "Aplastic Anemia Following Exposure to Carbon Tetrachloride." Without in any measure challenging the reliability of the clinical and laboratory findings presented, it becomes necessary to entertain reservations that carbon tetrachloride was the prime or sole causative agent. Of all industrial solvents, carbon tetrachloride more than any other has led to substantial reports as to toxic properties. Every degree of severity of involvement has been investigated, including mild functional disorders, acute nonfatal cases, rapidly fatal cases, and fatal cases with delayed symptoms. Autopsy appraisals have been frequent. The consensus of opinion is that expressed by Browning: "There appear to be no pathognomonic blood changes associated with carbon tetrachloride intoxication." However, Browning does mention one fatal anemia in a person who had acute dilatation of the stomach with heart failure, a secondary cause being "anemia haemolytic

and dyshaemopoietic." One year prior to his death this person had undergone carbon tetrachloride exposure. When scores of investigators consistently deny the occurrence of any significant blood changes in any form of carbon tetrachloride poisoning, then it becomes extraordinary that three fatal cases with profound and somewhat similar signs and symptoms should fall within the services of one physician within a period of five years. In medicine, doubt of the extraordinary becomes a virtue.

Two observations become pertinent. (1) It does not appear that the author made any workplace investigation to establish with hoped-for exactness the substances or substance to which the two industrial workers were exposed. The implication is that the three patients indicated that they had been exposed to carbon tetrachloride and such statements led to a diagnostic finality. (2) It is well known to industrial toxicologists that carbon tetrachloride is often admixed with other solvents, such as benzene. Indeed, in one of Straus's case records the exposure was to a mixture of kerosene with carbon tetrachloride. Although kerosene, like carbon tetrachloride, is not known to induce pronounced blood alterations, in that instance there existed equal opportunity to have labeled the aplastic anemia as caused by kerosene. But is it not possible that the solvent mixture may also have included an aromatic hydrocarbon? Since there is much scientific evidence opposing them, I shall, until better informed, regard the author's conclusions on the cause in these cases as in need of support.

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To the Editor—In the Clinical Notes of THE JOURNAL for June 19, 1954, page 737, Dr. Bernard Straus reports three cases of aplastic anemia that he attributes to exposure to carbon tetrachloride. His contention is startling to myself and others with whom I have corresponded since the publication of his article. If Dr. Straus is correct, then Hamilton, Haggard, Henderson, McCord, Kehoe, Princi, Ethel Browning of England, and many others of us in the field of occupational medicine have been most negligent investigators.

Out of a large series of patients of my own a great many were hospitalized for study. They received routine blood studies. In no instance was there any significant anemia. In addition to the usual effect on the central nervous system, the findings in those patients who had acute carbon tetrachloride intoxication revealed a fairly high frequency of renal involvement and, to a lesser extent, a hepatorenal syndrome. If death did not occur within a period of from few days to two or three weeks, eventual complete recovery took place.

Dr. Straus correctly intimates that there is a similarity of his cases to cases of intoxication by certain other chemicals, particularly benzol. Herein arises a question about his deductions that has occurred to those with whom I have corresponded. In each of the three instances he cites, the history given by the patient was apparently accepted as accurate. As far as I can read there has been no attempt to verify the history or to positively identify the alleged offending agent. In occupational medicine we have learned that this is a grievous error. We know that the patient's conception of the chemical nature of his exposure is very often erroneous. Very often it is necessary to go to the place of work, examine the environment, and analyze the chemical or chemicals involved. I could recite many examples in which, if this had not been done, a faulty assumption would have resulted.

Carbon tetrachloride is not a new or recently used industrial solvent. Its effect upon the human body has been studied for years and in many countries. If it had the property of producing profound anemia it would have been noted long before this by those intimately active in industrial toxicology. It is my studied opinion that either the cases cited by Dr. Straus were coincidental or the patients were exposed to an unsuspected

aromatic hydrocarbon I can be wrong, but until a further investigation is done along this line I would ask that everyone adhere to the clinical entity of carbon tetrachloride intoxication as we have known it

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SCHISTOSOMIASIS JAPONICA

To the Editor—While Wolford and Rumball's recent article on schistosomiasis (*J A M A* 155 1045 [July 17] 1954) served to illustrate one feature of the disease, it failed to include one of the most important facts about the case reported. That is, whether the disease was active. This problem should be a major concern of every physician who diagnoses or treats schistosomiasis. When one realizes that the drugs currently used for treatment are far from innocuous, the significance of activity becomes readily apparent, as this constitutes the only indication for therapy.

The detection of active infections in human beings rests, almost solely, on the recognition of living ova. A simple method has been reported (Newsome, J. Recent Investigations into the Treatment of Schistosomiasis by Miracid D in Egypt, *Tr Roy Soc Trop Med & Hyg* 44 611 [June] 1951) and should be used in every case. When the rectal biopsy specimen is obtained, it is placed in a small quantity of tap water for 30 minutes prior to microscopic examination. In this environment, live miracidia are stimulated to motion (a prerequisite to hatching, of course), and thus their viability can be attested. If the specimen is examined immediately after collection, motility is not apparent and the detection of live ova depends on the skill of the microscopist in recognizing flame cells within the shell of the ovum. Saline solution will inhibit hatching (Standen, O. D. The Effects of Temperature, Light and Salinity upon the Hatching of the Ova of *Schistosoma mansoni*, *Tr Roy Soc Trop Med & Hyg* 45 225 [Oct] 1951). Dead ova may be distinguished by their discoloration, but this requires some previous experience. Eventually some of these, entrapped by fibrosis, may be calcified. Those of us who see only an occasional case of schistosomiasis are inclined to be overly anxious to learn the result of biopsy and thus in haste tend to omit this most important step.

One erroneous statement in the report regarding the appearance of the infected rectal mucosa requires correction. In their summary the authors contend that while the mucosal appearance is not characteristic, it is not normal. This is contrary to personal observation, and Newsome has mentioned that perfectly normal appearing rectal mucosa (as seen through the proctoscope) may be found to contain both live and dead schistosome ova.

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To the Editor—On page 1045 of *THE JOURNAL* of July 17, 1954, included in the report entitled "Schistosomiasis Japonica Untreated Ten Years After Exposure," there are two photomicrographs purporting to show schistosomes in rectal tissue and liver tissue obtained by biopsy. The structures to which reference is made are ova of schistosomes and not the schistosomes themselves.

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REVIEW OF BOOK ON ALLERGY

To the Editor—I would like to call attention of *JOURNAL* readers to reviews of the book "The Allergic Child" other than the one published in *THE JOURNAL* (155 530 [May 29] 1954). I am asking this privilege because the review in *THE JOURNAL* was diametrically opposed to the majority of reviews, especially to those appearing in allergy journals. Two examples of these appear in the *Annals of Allergy* (12 232 [March-April] 1954) and the *Journal of Allergy* (25 384 [July] 1954).

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DE URINA

To the Editor—On reading Dr Smith's historical article, "De Urina" (*J A M A* 155 899 [July 3] 1954) it occurred to me that you might be interested in a delightful and pointed reflection on the subject written by a 17th century commentator, Thomas Fuller. His book, "The Holy State and the Profane State" first published in 1642, contains a chapter, "The Good Physician," in which is found the following paragraph:

'He trusteth not the single witness of the water if better testimony be had. For reasons drawn from the urine alone are as brittle as the urinal. Sometimes the water runneth in such post-haste through the sick man's body, it can give no account of anything memorable in the passage, though the most judicious eye examine it. Yea, the sick man may be in the state of death, and yet life appear in his stale' (Fuller, T. The Holy State and the Profane State, edited by M. G. Walten, New York, Columbia University Press, 1938, vol 2, p 53).

Fuller, an ecclesiastic who wrote on a variety of subjects, seems to be among those who decried medieval uroscopy. Even in modern times we occasionally see infants and children suffering from genitourinary tract disease in whom a 'most judicious' examination of the urine fails to reveal abnormalities consistent with the severity of the underlying lesions.

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MESENTERIAL LYMPHADENITIS CAUSED BY PASTEURRELLA PSEUDOTUBERCULOSIS

To the Editor—In two reports published in 1953 (*Deutsche med Wchnschr* 78 532-535 [April 10] 1953, *Virchows Archiv für pathologische Anatomie* 323 664-684, 1953), Masshoff described the frequent occurrence of a benign, abscess-forming mesenterial lymphadenitis in adolescents which, causing symptoms suggestive of those of acute appendicitis, often led to surgical intervention. At operation the presence of an abundant and clear peritoneal exudate was noted. Usually the appendix appeared normal, but enlarged lymph nodes were found to be present singly or in groups in the mesentery, particularly in the ileocecal region. In a small number of cases signs of acute gastroenteritis dominated the clinical picture. Laboratory studies of the cause of this new syndrome gave the following results:

- 1 In 3 of the 15 cases in which the presence of the above described lymphadenitis had been proved histologically, *Pasteurella pseudotuberculosis* could be isolated from operatively removed lymph nodes.
- 2 The serums of 14 of these patients agglutinated several *P. pseudotuberculosis* strains at titers ranging from 1:200 to 1:3,200. The blood of one of the bacteriologically positive patients was not available for serologic tests.
- 3 The serums of 220 persons, sent to this laboratory for Wassermann or Widal tests, failed to agglutinate *pseudotuberculosis* bacilli even at a titer of 1:10. The serums of 48 patients who had been recently operated on for appendicitis also proved negative.
- 4 The serums of 4 persons, sent in for the purpose of Widal tests, agglutinated *pseudotuberculosis* bacilli at titers ranging from 1:800 to 1:6,400. It was learned that these persons had been recently hospitalized, three of them with signs suggestive of appendicitis which, however, soon gave way to symptoms of gastroenteritis and the fourth on account of acute gastroenteritis.

The apparently frequent occurrence of benign pseudotuberculosis infection in man deserves the attention of clinicians and laboratory workers. A full report on the investigations summarized above will soon appear in *Deutsche medizinische Wochenschrift*.

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BUSINESS PRACTICE

THE YOUNG PHYSICIAN'S FINANCIAL FUTURE

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The following article discusses the role of insurance in the planning of physicians' savings and investments—Ed

Perhaps it is a great tribute to the medical profession as a whole that the young intern about to go into private practice can look ahead with near certainty to a time schedule that would give place to him—a time schedule that will all but preclude free time in which to become an investment expert. At the same time this young man can expect a higher than average income and larger than average eventual funds, which will need placement. He also knows that he will have to do whatever is done for the future of his family and his own later years entirely by himself. As are most professional persons, he is completely dependent on his own efforts for every dollar of income; he realizes that there will be little or no continuing income in the event of disability or retirement, and over the years, as he is accumulating funds for his family's protection and his own later years, his needs for protection against financial vicissitudes are probably greater than those of persons in almost any other occupational group. Life insurance therefore becomes a matter of keen interest for physicians, young and old.

INSURANCE FOR DEBTS

At the outset of his professional career the physician has a greater need for life insurance protection than almost any of his contemporaries, if for no other reason than that physicians often carry an unusually heavy burden of debt when they start. This debt stems from the costly, prolonged education and training, the necessity for establishing well-located and sometimes expensive office quarters, the need to accumulate a large amount of equipment and supplies to meet modern practicing requirements, and the need for time to develop a full income from practice. Not many can do all this entirely from cash resources, and those who cannot, contract a debt that could become a great burden to the family, should the physician die before it is paid. Many a physician has drawn on life insurance even before the day of office opening, having secured his medical training through loans from life insurance policies or loans protected by policies. All families have a need for "clean-up" insurance, that is, life insurance set up for the distinct purpose of wiping out debts and outstanding bills, so that the family may pick up from there on its reorganized living. This is the first consideration in family protection. The average family might find \$1,000 or \$2,000 sufficient for this purpose, but many physicians would find several times such an amount necessary. A sound family program demands that all debts and outstanding bills be covered by life insurance, whatever their amount. If a physician has had to borrow to put up his shingle, buy his equipment on credit, purchase a home to house his new office, and stretch his credit to the utmost during those early days of pressure, his "clean-up" aggregate may well come to many thousands of dollars.

The young physician is likely to have to meet this greater need out of a relatively small income. It may be necessary for him to protect this portion of his needs through inexpensive term insurance, rather than a permanent plan. There is a warrantable basis for using term protection for this need, in that much of it is a short-term commitment that may not exist a few years later. Convertible term insurance policies can later be changed to permanent plans, as increasing income warrants. On the basis of term insurance the physician could probably insure

against indebtedness, whatever its amount, for less than 1% annually of the sum total of debts. Permanent life insurance, which can be applied to other family needs as soon as the debt load has been removed, would require about two and one half times the premium outlay for the term plan, this would still represent less than 2% annually of the debt total.

FAMILY PROTECTION AND INCOME

The young physician will have other insurance needs that depend in amount and nature on his family situation. More than likely he will be married, and he may have young children. The family protection program thus becomes a first consideration in his financial planning. This need does not conform to any rule of thumb; each family situation requires a custom built plan that considers factors such as current income and scale of living, number of years of child dependency, time needed for adjustment to a new program, and the buying capacity of the head of the family. Families usually like to have at least one year's income at present levels assured, to give that much time to adjust to any new order of living that may be necessary. An income sufficient to keep the family together until the youngest child is old enough that the mother could safely seek employment is a second essential provision. After that, an income guarantee throughout the lifetime of the mother is desirable and can be added insofar as the physician can afford to purchase it.

It takes a sizable amount of life insurance to do all these things, but special plans that aid materially in expanding the coverage without a proportionate premium increase are available, for instance, the family income plan can provide an income of \$10 per month for each \$1,000 of life insurance, to be continued for 10, 15, or 20 years from date of purchase, after which the full face amount of the policy is paid to the widow. Thus, a physician whose youngest child is 3 and who wishes to ensure an income of \$250 per month until that child is 18 might set up such a plan under a \$25,000 policy; this would cost about 25% more than a straight \$25,000 policy. The plan would provide \$250 monthly for the widow until 15 years from date of purchase and then pay the full \$25,000 to her, either in cash or in continued income. The details of a family income plan are worked out by the physician and his life insurance agent. The most satisfactory procedure is for them to draw up a schedule of what is desired and another of the maximum the young physician could put into such protection and then to bring the two figures together. Usually some cutting in the desired program is necessary, but no one other than the physician himself can decide which item is to be trimmed and which left intact. There is a distinct advantage in planning the full desired program initially, as this may be followed over the years as income increases, since physicians are apt to move fairly rapidly into a higher income bracket once their practice is established, additions of further portions of the program may take place at shortening intervals.

Educational Guarantees for Children—Another item in the protection program that many physicians are interested in is the setting up of educational guarantees for their children. Because of his own long and expensive educational requirements, the physician is more apt to recognize the value of planning ahead for education than many persons. Perhaps he saw some of his classmates leave school because of financial pressures that followed a parent's death. Whatever the background, the interest is there. An educational guarantee can be included in the family program at a small additional cost. Some companies issue special educational policies that provide a monthly payment for the 10 months of each of the four college years, with an additional amount payable at the start of each school term. If a medical education is in prospect this would have to be amplified to cover the required postgraduate studies. Under most of these plans the payments are made if the parent does not live to make them, it is possible to obtain policies that will

provide the college funds whether the policyholder lives or dies, though on that basis the premium would be larger, as it would have to guarantee the full amount of benefits on an endowment basis

RETIREMENT

An important consideration in any physician's financial planning is the creation of a satisfactory retirement program for himself. This cannot be done until the family plan is under way, but it should be started as soon as possible if minimal cost is to be secured. The physician may well be able to carry on his practice far beyond the usual retirement age, in fact, he may have to make special efforts to check further addition of patients in those later years—but he is also fully conscious of the almost universal need to be able at least to lighten his duties then, if not to retire from all practice. The basis of all saving and investment is the accumulation of funds for the needs of family protection and retirement. Hence, life insurance becomes a basic part of the savings and investment programs—activities for which the physician has little time, especially in the early days of his practice. Even term insurance becomes a part of the investment planning, in effect, though there is almost no investment element in the policy itself. Life insurance has special advantages in that it calls for regular, periodic payment and affords no opportunity to fall behind in investment planning for lack of time. It also minimizes the investment problems for the family, should the physician die. A retirement program requires relatively large blocks of investment funds, and life insurance can be an invaluable aid in setting up the guarantee for those later years.

When considering insurance or annuity plans for retirement, it is well to remember that the basic family life insurance policies all have cash values that will have grown to a large sum by retirement age. This cash value can be used to provide retirement income for the policyholder himself if the protection need for which it was bought no longer exists. Straight life insurance policies taken out between ages 25 and 35 have a cash value at age 65 of about 60% of the face amount of the policy, if the policyholder has a \$25,000 straight life policy, taken out at age 30, the age 65 cash value would be near \$15,000. Specific provisions for retirement income can be made with a wide range of contracts. There are straight annuities, some of which can be bought on the single premium basis, some on the annual premium basis, cash refund annuities, which guarantee the return of at least as much as was paid in, although for this extra guarantee the monthly retirement income is somewhat smaller, and policies that combine the retirement feature with life insurance protection, giving a specified amount of protection up to age 55, 60, or 65 and then an income, usually \$10 monthly per \$1,000 of policy, for life. The last type of policy has always been popular with physicians, as it channels many of the investment problems of retirement into one simple insurance plan. Although such a plan may not have as big an earning rate as some types of investment, it is guaranteed and safe and takes no time away from the practice for management.

In all retirement plans it is well for the policyholder to consider the joint needs of both himself and his wife at retirement age. All too often a retirement plan is set up for only the policyholder himself, without provision for income for his wife after he dies. A joint and survivor policy or clause would provide income for as long as either lived—at a higher cost, because it is in effect a double annuity. The young physician may not be ready to undertake this portion of his life insurance program at the outset. The funds for clearing up debts and bills and the provisions for family maintenance are the first requirements but as soon as the practice warrants, the young physician may wish to revise his program to include the retirement plan.

TAX PROBLEMS

Another important consideration in the physician's protection program, as his income moves up to significant levels, is the matter of estate shrinkage. The young physician, perhaps still

struggling to establish his practice, probably feels he is far from being an estate owner, but under today's heavy tax load the definition of an estate for tax purposes becomes a reality early in a career. Especially is this so for persons like physicians who are operating on a high level of expenses, ownership, and income. Take the case of a young physician who owns his office-home, who has set up an adequate life insurance program, and who has acquired some basic personal property. Federal estate tax exemption is set at \$60,000, and with all items of ownership combined the community property provisions raise the effective exemption to \$120,000 for a married man. With a home worth perhaps \$30,000 to \$50,000 and life insurance totaling an even larger amount, he may enter the estate tax bracket at an early date. State inheritance taxes often apply to even lower amounts. In addition to all this, income taxes must be paid currently on this independent operator's income. All of these taxes must be met before any of the other items of family protection can be covered, even if it means a sacrifice sale of property, hence, it is important that the physician at all times keep in mind the growing hazard of estate shrinkage. He may cover this with a special life insurance policy, keeping the family program intact as planned. Life insurance is better than almost any other medium for making funds available for tax purposes, as it gives the executor immediate cash and obviates any possibility of having to sell part of the estate to meet taxes.

CHANGING NEEDS

The most effective procedure in life insurance planning is for the physician to select a life insurance agent in whom he has confidence and then put the family financial case" into his hands just as completely and on just as confidential a basis as do the patients who bring their health problems to him. A base program can then be drawn up and an objective plan prepared, and through periodic rechecks the physician can amplify his program to include more and more of the general objective as increasing income permits. This periodic check-up is an important part of any life insurance plan. Every policyholder should have his program reviewed carefully by his agent every year, if possible—certainly every second year. In the earlier years of practice, when changes in basic family situations develop rapidly, the check-up should be made as frequently as possible. This does not mean that the policyholder should wait until a calendar date to report a change or seek information about meeting one of the purposes of the check-up is to make certain that no change has developed that has not been adequately covered in the plan.

Change is one of the great certainties in life. This is true of our whole way of life, of our country, of our economy, and of our family and individual life. Often these changes affect other parts of our life plans. Increased income widened family responsibilities, change of location revisions in the tax program—those are just a few of the many factors that call for changes in the life insurance program. Even if no such changes have developed since the last program check by the policyholder and his agent, there may be a great advantage in seeing if time has shifted the viewpoint somewhat, perhaps making some variation in the program details or some addition to the insurance desirable. It is important that the life insurance program be kept up-to-date at all times. The physician, whether young or old, should be careful to have these repeated check-ups made. They cost the policyholder nothing and they may prove highly profitable to the ultimate beneficiaries. Life insurance savings investments, and property of any kind all combine to make up the financial planning of the family, even the leading security analysts place life insurance as the primary item for consideration of the family when establishing its financial plan.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Pulseless Disease A Jervell *Am Heart J* 47 780-784 (May) 1954 [St Louis]

A case of pulseless disease is reported in a woman, who at the onset of the disease was 30 years old. Her first symptoms were pain in the chest and breathlessness on effort. The chronic vascular disease attacked the patient's vessels that arise from the aortic arch and led to a pronounced narrowing of these vessels. This resulted in loss of pulsation in the arteries of the upper extremities with symptoms of ischemia in the right hand and reduction of pulsation in carotid arteries on both sides, with symptoms of cerebral ischemia. In addition, signs of aortic incompetence were observed and possibly of aortic stenosis. The patient had general symptoms and most strikingly a greatly raised sedimentation rate. During the patient's many stays in the hospital, she received several courses of penicillin in large doses. She was also treated with chlortetracycline (Aureomycin), corticotropin (ACTH), cortisone, and lastly she was given local roentgen ray treatment for pronounced soreness over the neck vessels. None of these treatments had any definite effect.

Arterial Hypertension Treated with Rauwolfia Serpentina and Veratrum Viride C Joiner and R Kauntze *Lancet* 1 1097-1099 (May 29) 1954 [London, England]

Joiner and Kauntze analyze the results of a clinical trial of *Rauwolfia serpentina* in 24 severely hypertensive patients under treatment with *Veratrum viride*. All patients were given alka-vervir (Veriloid) 1 mg per 10 lb (4,536 gm) of body weight in three divided doses daily for a preliminary fortnight and throughout the trial. For eight weeks 12 patients (group A) received placebo tablets, and then for the next eight weeks the active substance, 0.5 gm nightly. The remaining 12 patients (group B) were given a preparation of *Rauwolfia serpentina*, 0.5 gm each night for eight weeks and 1 gm nightly for a further eight weeks. The patients were allocated to one or the other group at random. One of the 24 patients died from malignant hypertension with uremia, and 2 were admitted to the hospital with left ventricular failure. One defaulted before the observations were complete, and 2 others were obtaining drugs from other sources. One other patient's readings proved so variable as to be unreliable, in yet another such severe pruritus developed that the administration of *Rauwolfia serpentina* had to be stopped. Bradycardia was shown in 6 of the remaining 16 patients. Lowered diastolic pressures were demonstrated in six. The object was to assess the additive or synergistic effect of *Rauwolfia serpentina* and not its single action. The results so obtained refer only to a small group of patients, and generalization is unjustifiable, yet this group represents the main problem in treatment, the severe or moderately severe, progressive hypertension, in which effective oral therapy is particularly desirable. *Rauwolfia serpentina* in a dosage of 0.5 gm daily induced bradycardia and lowered the diastolic blood pressure in certain hypertensive patients already under treatment with *Veratrum viride*, but there was no evidence of a striking additive or synergistic action.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Electrocardiographic Changes Simulating Recent Myocardial Infarction J A Segal *Connecticut M J* 18 493-499 (June) 1954 [New Haven, Conn.]

There are puzzling cases in which the symptoms appear to be those of recent myocardial infarction and the electrocardiographic findings are indicative of such disease, but which at autopsy reveal patent coronary vessels and no evidence of recent myocardial infarction. Because of recent experience with two cases, Segal reviewed the literature and found that others had had similar experiences. The first of his patients, a man aged 65, experienced severe pain in the upper abdominal region. His serum amylase was over 1,100 units and he had boardlike rigidity in the upper part of his abdomen. The serial electrocardiograms revealed abnormal Q waves, S T elevations and depressions with T wave inversions consistent with a diagnosis of recent myocardial infarction. Autopsy showed that the Q waves were due to an old myocardial infarction and the S T and T wave changes were due to a circumscribed area of acute fibrinous pericarditis. Death was due to acute hemorrhagic pancreatitis. The second patient, aged 80, was at first thought to have acute appendicitis. His appendix was removed. Some days later pain in the right upper quadrant developed that suggested acute cholecystitis. He was operated on for this, and gall stones were found. During the acute distress in the upper part of the abdomen there existed electrocardiographic changes consistent with a diagnosis of recent myocardial infarction. He later died because of a bleeding duodenal ulcer. Autopsy revealed no abnormal cardiac findings. These two cases demonstrate that in acute diseases of the upper abdominal region the electrocardiogram may show changes that simulate recent myocardial infarction.

Thrombosis of the Portal Vein Demonstrated by Means of Percutaneous Splenic Venography H J J Fesevur and J R von Ronnen *Nederl tijdschr geneesk* 98 1502-1505 (May 29) 1954 (In Dutch) [Amsterdam, Netherlands]

The case reported not only demonstrates the misleading symptoms that may be caused by hypernephroma but also shows the valuable information that can be provided about the spleno-portal circulation by splenophlebography. In this method of examination, a water-soluble contrast medium is introduced into the spleen and an informative roentgenogram is obtained of the splenic veins and of the portal vein. The observations obtained in the course of the several exposures following introduction of the contrast medium are described and discussed. The patient at first seemed to have hepatic cirrhosis, later splenic venography revealed thrombosis of the portal vein, and finally with the aid of intravenous pyelography the real cause of the disorder was proved to be a tumor of the right kidney. The authors emphasize the fact that carcinoma of the kidney may be present under a wide variety of symptoms, which frequently lead to an incorrect diagnosis.

The After-History of Pulmonary Tuberculosis II Thoracoplasty Ten-Year Follow-Up R Douglass and E B Bosworth *Am Rev Tuberc* 69 930-939 (June) 1954 [New York]

The authors report on 238 patients with pulmonary tuberculosis who were subjected to thoracoplasty. Two hundred five of these had active parenchymal disease for which they were operated on between 1937 and 1947 and were followed through 1950. In 70% of the 205 patients the disease was arrested at the end of 10 years' follow-up. Arrest of the disease occurred for the most part by the second anniversary of the thoracoplasty and the incidence of arrests showed little change thereafter. Relapses occurred throughout the 10 year period. The outlook was poor in the absence of resection. Deaths occurred at an almost uniform rate after the initial postoperative period, in the course of which one-sixth of the deaths occurred. Approximately one-tenth of the later deaths were due to cor pulmonale.

In an additional group of 33 patients with pleural lesions, thoracoplasty was performed because of inexpandable lung in 12, tuberculous empyema in 15, nontuberculous empyema in 3, and mixed empyema in 3. There were no deaths due to tuberculosis, and one patient had exacerbation of contralateral parenchymal disease. Two patients in this group died of cor pulmonale.

Tuberculous Peritonitis P. K. Chatterjee. *J Indian M A* 23 317-324 (May) 1954 (In English) [Calcutta, India]

The author reports on 52 patients with tuberculous peritonitis. There were 24 males and 28 females. The high incidence of tuberculous peritonitis (54%) in the female patients is significant. Most of the female patients were married and in the reproductive age. The age incidence of tuberculous peritonitis conformed to the general pattern of tuberculosis morbidity in various age groups, with the highest incidence between 21 and 30 years of age. The most frequent symptoms were fever (40 patients), wasting (30 patients), and abdominal pain (29 patients). The most characteristic sign in 36 patients (69.2%) was the presence of lumps in the abdomen. The lumps were either discrete and well defined (suggesting enlarged mesenteric lymph nodes) or vague, irregular, and ill-defined masses that suggested matted mesentery and intestinal coils. Active tuberculous lesions in the lungs and pleura were observed in 21 patients. Direct spread through ingestion sputum may have occurred in 17 patients with active tuberculous lesions in the lungs. The high incidence of widespread lymph node involvement suggested that in many patients peritonitis was the result of a progressive postprimary disease due to hematogenous dissemination. Presence of free fluid, abdominal pain, and lumps or masses, particularly around the umbilicus, were considered characteristic and offered aid in diagnosis. When these were associated with fever, anemia, and wasting, diagnosis was highly probable. Presence of pulmonary tuberculous lesions or involvement of lymph nodes made the diagnosis almost certain. Roentgen examination of the intestinal tract after a barium meal was of considerable help in differential diagnosis from ileocecal tuberculosis or regional ileitis. Immediate results of treatment are reported in 30 of the 52 patients, 16 of the 30 patients were given 1 gm of streptomycin in two injections daily for one to two months. Fourteen patients were given 1 gm of streptomycin and 10 to 12 gm of *p*-aminosalicylic acid daily for six weeks to four and a half months. Temperature was promptly controlled. Relief of abdominal pain and diarrhea and improvement in appetite were also promptly effected. Patients gained weight rapidly. Effect on abdominal masses was striking and even large masses were observed to resolve completely. Absorption of peritoneal fluid also occurred. In patients with large ascites, improvement did not occur so rapidly, and in some paracentesis had to be used. Twenty-one (70%) of the 30 patients showed considerable improvement, and an additional 5 patients (16.7%) showed improvement but were not completely free from all signs and symptoms. Eighteen of the 52 patients were followed for 12 to 18 months, of these 18 patients, 10 clinically showed arrest of the disease and 4 had a recurrence of the abdominal condition within 3 to 12 months. One patient died after 18 months, and another still has some signs and symptoms at the end of the 11th month. Arrest of the disease may be obtained in most patients provided they are not in an advanced stage with extensive pulmonary disease, by a course of specific treatment with streptomycin and *p*-aminosalicylic acid for four to six weeks combined with rest in bed and general treatment followed by adequate aftercare and treatment of pulmonary or other lesions. Although streptomycin alone gives satisfactory results, it is preferable to combine it with *p*-aminosalicylic acid because of the risk of streptomycin resistance.

Epidemic Hemorrhagic Fever E. DeCoursey. *Wisconsin M J* 53 325-328 (June) 1954 [Madison, Wis.]

Epidemic hemorrhagic fever was practically unknown to western medicine before 1951, when outbreaks occurred in United Nations troops in Korea but by the summer of 1953 there had been approximately 2,000 cases among United States forces with about 120 deaths. The disease is often referred to as EHF. The cause of epidemic hemorrhagic fever is uncertain. Some evidence implicates a filterable virus as the causative agent, a trombiculid mite as the vector, and a rodent as the

reservoir. The basic pathological change is increased vascular permeability with edema, serous transudate, and hemorrhages. The kidneys, pituitary, adrenals, heart, and gastrointestinal tract are principally involved. Medullary hemorrhages and necroses give a characteristic renal picture, the "EHF kidney." Mononuclear infiltrations appear in the heart, spleen, and lymph nodes. Epidemic hemorrhagic fever is characterized by the sudden onset of a mild to severe influenza-like syndrome that progresses through febrile, hypotensive, oliguric, diuretic, and convalescent phases. The diagnosis is entertained in a febrile patient who has recently been in Korea and who shows hemato-poietic, renal, and cardiovascular involvement. Combined urinary and hematological laboratory findings are strongly suggestive, and proteinuria is necessary for confirmation of the diagnosis.

Treatment of Chronic Pulmonary Emphysema M. S. Segal, A. Salomon and J. A. Herschfus. *Am. Rev. Tuberc.* 69 915-929 (June) 1954 [New York]

Correlation of certain phases of management of the patient with chronic pulmonary emphysema with the knowledge of its physiopathology was attempted. A decreased vital capacity, a small inspiratory capacity, an enlarged functional residual capacity and residual volume, a slight increase of the timed vital capacity, a significantly increased ratio of the residual volume to the total lung capacity, and a seriously disturbed ventilation were the basic defects demonstrated by pulmonary function studies in the patient with chronic emphysema. Continuous preventive measures to control and improve these abnormal findings should be employed. The experiences of the authors with several therapeutic measures in the treatment of chronic pulmonary emphysema and complicating manifestations were described, namely, antihistaminic preparations, such as a solution of diphenhydramine, ammonium chloride, sodium citrate, chloroform and menthol (Benlyn expectorant) or tripelem-namine (Pyribenzamine expectorant) hydrochloride, aminophylline, expectorant mixtures, antibiotics such as penicillin, streptomycin, or oxytetracycline (Terramycin), aerosols of bronchodilators, water or preferably a nontoxic proprietary detergent (Alevaire) used as humidifiers, enzyme aerosols such as pancreatic deoxyribonuclease (Pancreatic Dornase), corticotropin and cortisone, the use of venesection, digitalis, and the mercurials. The general principles were outlined for the use of oxygen, intermittent positive pressure breathing in inspiration, and continuous aerosol therapy. The combined use of bronchodilator aerosols with intermittent positive pressure breathing in inspiration was described for the routine treatment of chronic pulmonary emphysema. The use of alternating positive negative pressure breathing (exsufflation) proved of considerable value for the evacuation of bronchial secretions when other therapeutic agents failed. The hazard of the carbon dioxide intoxication syndrome and respiratory acidosis is always present in patients with chronic hypoxia secondary to chronic pulmonary emphysema or chronic pulmonary heart disease, particularly if respiratory-depressing drugs are administered preceding or along with the administration of high concentrations of oxygen. The prevention and management of respiratory acidosis was discussed. The principal indications and the use of breathing exercises, pneumoperitoneum therapy, and various forms of mechanical respiration were presented.

Cortisone and Combined Antibiotic Therapy of Acute Brucellosis Melitensis. G. B. Magill, J. H. Killough and S. I. Said. *Am. J. Med.* 16 810-817 (June) 1954 [New York]

Cortisone was given to 48 patients with acute brucellosis, 46 of whom had not received previous therapy, and 2 had relapsed from short courses of a single antibiotic. Blood cultures were positive for *Brucella melitensis* in 43 (90%). All 48 patients received oxytetracycline (Terramycin) at four hour intervals in daily doses of 3 gm for the first week and 1.5 gm for the subsequent two weeks. In addition to oxytetracycline, dihydrostreptomycin was administered intramuscularly in daily doses of 1 gm for the entire three week period. Twenty-four patients were given a total dose of 0.4 to 1 gm of cortisone during the first three to seven days of antibiotic therapy only. Twenty-two of these received 0.3 gm of cortisone on the first day, 0.2 gm on the second, and 0.1 gm on subsequent days. The other two

patients received 0.1 gm of cortisone daily. The second group of 24 patients received the hormone during the entire three week period of treatment with antibiotics; cortisone was administered at 12 hour intervals and the daily dose consisted of 0.1 gm the first week and 0.05 gm the second and third weeks, with a total dose of 1.4 gm. Twenty-two patients with brucellosis who had been treated with oxytetracycline (Terramycin) and streptomycin for three weeks were used as controls. Clinical response to the combined hormone-antibiotic therapy was rapid and at times dramatic. Patients became afebrile within an average of 22 hours after institution of the treatment as compared to 46 days in the control group who did not receive cortisone. Herxheimer-like exacerbations of fever or symptoms occurred in 8 (17%) of the 48 patients, as compared to their occurrence in 12 (55%) of the 22 control patients. Although relapse rates appeared to be higher in patients receiving cortisone for one to three weeks (5 [29%] of 17 patients and 8 [33%] of 24 patients) than in those who received cortisone for only four days or not at all (4 [18%] of 22 patients or 1 [14%] of 7 patients), the differences were not statistically significant. *Brucella* agglutination titers appeared to be depressed by the cortisone therapy. Occasional major side effects of cortisone therapy (manic psychosis in a 50-year-old woman, the occurrence of a cavity in a previously noted, limited area of pulmonary infiltration, moderate gynecomastia in an 18-year-old boy, and generalized anasarca in a 40-year-old man with cor pulmonale) militate against its general use in brucellosis. The possible effects of lowering host resistance or causing more frequent relapses weigh against the use of cortisone alone or for long periods even with antibiotic therapy. Its dramatic effect in alleviating toxemia, however, makes the discriminate use of cortisone a helpful adjunct during the first four or five days of specific antibiotic therapy of acute brucellosis.

SURGERY

Cor Triatriatum. A Rare Malformation of the Heart, Probably Amenable to Surgery, Report of a Case, with Review of Literature. A. Pedersen and F. Therkelsen. *Am Heart J* 47:676-691 (May) 1954 [St. Louis].

Cor triatriatum, a rare congenital malformation of the heart, in which a transverse septum stretches across the left atrium, separating the opening of the pulmonary veins from the mitral orifice, is reported in a 29-year-old woman. The patient had a history of increasing cardiac distress. No murmur could be heard. The heart was not enlarged, but a prominent second left arch and pulmonary congestion were observed in the roentgenogram. The lower lobe of the left lung was pronouncedly emphysematous. An electrocardiogram showed right ventricular hypertrophy. On heart catheterization, an excessive pulmonary hypertension was found, and the pulmonary "capillary pressure," too, was high. A mitral disease, therefore, was suggested, and the patient submitted to surgical intervention. Thoracotomy revealed a normal mitral valve, and a normal pressure in the left atrium was measured directly. Postoperatively, the patient had increasing dyspnea and cyanosis and died on the ninth day after surgery. Necropsy revealed a transverse septum with only one small perforation separating the opening of the pulmonary veins from the rest of the atrium. Reports of 62 cases of anomalous cords or septums within the left atrium were collected from the literature. Thin cords or even broad bands across the lumen were of no significance. The real cor triatriatum, however, was a serious disorder. Many of the patients died shortly after birth, and only a few reached the adult age. The clinical symptoms and signs were not characteristic, and diagnostic help was not obtained from the usually employed investigations, such as auscultation, electrocardiography, and roentgenography. An *in vivo* diagnosis, therefore, must be left for an exploratory thoracotomy. Regarding the possibility of a successful surgical interference, this disorder, even if rare, should be taken into consideration in obscure cases of pulmonary hypertension, especially when a high "pulmonary capillary pressure" has been measured. After cardiotomy, a direct digital exploration of the anomalous structure would afford the necessary details. It should be kept in mind that with the usually employed approach through

the auricular appendage the exploring finger will enter in front of the diaphragm and directly on the normal mitral valve, as actually happened in the authors' case. As the diaphragm was often funnel shaped in the direction of the blood stream, the way of entrance through a pulmonary vein should possibly be preferred in such case. The splitting of the anomalous structure by finger fracture or by cutting instruments should be made as complete as possible, as there is here no valvular function to preserve.

Surgical Diseases of the Pulmonary Artery. Central Aneurysms, Arteriovenous Fistulas, and Peripheral Aneurysms. D. H. Watkins and F. R. Harper. *Am Surgeon* 20:602-618 (June) 1954 [Atlanta, Ga].

Two cases of central aneurysm of the pulmonary artery are reported in a 47-year-old man and in a 64-year-old man, respectively. It was possible to mobilize the aneurysm in the younger man and wrap it with a strip of reactive cellophane. The aneurysm in the other patient was so large and so adherent to the surrounding structures that any definite therapy was impossible. The production of a benign bronchial stricture by external pressure of the aneurysm with resulting chronic obstructive pneumonitis was noted. Central aneurysms of the pulmonary artery are uncommon lesions. They produce death by heart failure and less commonly by rupture. From the standpoint of differential diagnosis they must be distinguished from mediastinal nonvascular masses. Recognition of associated cardiac lesions is important. The occurrence of pulmonary arteriovenous fistulas is reported in two men aged 42 and 64 years. A lobectomy of the left lower lobe was done in the younger man who had multiple pulmonary arteriovenous fistulas associated with other manifestations of hereditary hemorrhagic telangiectasis (Osler's disease). Half of the cases of arteriovenous fistula show evidence of Osler's disease. Roentgenographic examination of the other patient showed a coarsely lobulated mass measuring about 4 cm in diameter in the right midlung field intimately associated with large vessels coursing downwards from the right hilum. The impression from this examination was an arteriovenous aneurysm in the right midlung field and moderately bilateral emphysema; this impression was confirmed by angiocardiology. Surgical intervention was not performed because of the patient's age and emphysema. Pulmonary arteriovenous fistulas are commoner than central aneurysms and must be distinguished from round, parenchymal pulmonary lesions. A significant incidence of serious or even fatal complications in untreated patients (hemoptysis, hemothorax, bacterial endocarditis, brain abscess, thrombosis associated with polycythemia) leads the authors to recommend surgical measures except in patients of advanced age, in those seriously ill of unrelated disease, and in those who have widely distributed lesions. Surgical resection should be only as extensive as necessary to extirpate the lesion. Simple ligation of the supplying vessels is not recommended because of numerous collateral vessels. Simple aneurysms of the peripheral branches of the pulmonary artery are rare lesions. The most frequent starting point is ulcerative endocarditis. Operation is usually impossible because of the severity of the underlying disease.

NEUROLOGY & PSYCHIATRY

Intellectual and Affective Changes in Essential Hypertension. R. M. Reitan. *Am J Psychiat* 110:817-824 (May) 1954 [Baltimore].

The Rorschach test was administered to patients with neurosis, with organic brain damage, and with essential hypertension. Intergroup statistical comparisons were made of the mean values on each of the Rorschach variables. The relative frequencies of Rorschach "signs" or organic cerebral damage in the three groups were compared using the chi-square technique. The results indicate that the mean scores of the hypertensive group consistently fall between those of the other two groups. A review of the protocols in the three groups indicates a considerable amount of neurotic symptomatology in each group, but confirms the quantitative results that indicated intellectual impairment caused by organic brain damage in some of the patients with essential hypertension.

Initial Masking of Organic Brain Changes by Psychic Symptoms Clinical and Electroencephalographic Studies R. W. Waggoner and B. K. Bagchi *Am J Psychiat.* 110 904-910 (June) 1954 [Baltimore]

Waggoner and Bagchi emphasize that brain tumors may exist in patients whose symptoms are primarily mental. The psychiatrist should be "brain tumor conscious," because if the patients who do have brain tumors were recognized sufficiently early unnecessary or prolonged therapeutic procedures or custodial care could be avoided and the way cleared for early surgical treatment. Certainly the presence of a brain tumor should be recognized before the use of potentially dangerous therapeutic procedures, such as electroshock. It is not only difficult to recognize the presence of a brain tumor, but its localization also is difficult in the presence of mental symptoms. Hence any procedure that will enable the psychiatrist or neurologist to make an earlier diagnosis of a focal lesion should be utilized, particularly if this procedure does not involve any risk or cause any pain to the patient. The authors present here six patients in whom the electroencephalogram was of particular help in early diagnosis. In all, the diagnosis of a focal lesion was either positively indicated or suggested by this procedure. The authors believe that if a routine electroencephalographic study were done on all patients admitted to state hospitals, an indication of focal lesion might be found in many. In such patients, a localizing study should be carried out. In this way, it is entirely possible that a considerable number of brain tumors would be recognized early. Even if only a small percentage of mental hospital patients were found to have brain tumors and some of these were relieved by operation, the time and expense of the electroencephalographic examination would be an excellent investment.

The Specificity of the Complement Fixation Test in Poliomyelitis F. L. Black and J. L. Melnick *Yale J Biol & Med* 26 385-393 (April) 1954 [New Haven, Conn.]

Black and Melnick point out that infection with poliomyelitis virus gives rise to complement-fixing antibodies that may be detected with antigens prepared either from the brains of infected mice or from tissue culture fluids. Previous investigators (Casals, Svedmyr) used sufficient antigen in each test to obtain maximum sensitivity. With this antigen concentration the presence of antibody could generally be detected within the first week after onset of the disease, but the serums usually gave similar complement fixing titers against antigens of the three types of poliomyelitis virus regardless of the type involved in the infection. The authors describe a complement fixation test for poliomyelitis that uses minimal quantities of complement and antigen. They employed it in two types of investigations: serodiagnosis of infection and antibody response to vaccination. Tests for complement antibodies for three types of virus were made on specimens obtained from 49 poliomyelitis patients. A homotypic complement fixing titer rise was found in 90% of the patients from whom virus was isolated, and a heterotypic rise in 10%. Serums from 30 children were tested for complement fixing antibodies before and after inoculation with 40% formaldehyde solution (Formalin) inactivated type 1 virus. Eighteen of these children showed a postinoculation increase in type 1, 2, or 3 antibodies. Some showed complement fixing responses to antibodies of more than one type. Nearly all of the increases occurred in persons who possessed preinoculation neutralizing antibodies.

GYNECOLOGY & OBSTETRICS

Endometriosis of Navel J. M. Mainetti and J. A. Triaca *Sem med* 61 540-546 (May 6) 1954 (In Spanish) [Buenos Aires, Argentina]

A married woman 35 years old complained of painful menstruation. She also complained about moderate dyspareunia and pelvic pain before and during menstruation. Her only child is a normal child 5 years old, who was born by cesarean section. The patient had a nodular purple tumor of the navel which increased in size during menstruation, was painful before and during menstruation, and painless in the intermenstrual period. After the cesarean section, pain became more acute and diffuse,

the tumor increased in size and became ulcerated, and a menstrual fistula, which bleeds during menstruation, opened. The diagnosis was based on the symptoms and the character of the pain and of the tumor. It was confirmed by histological study of the removed tumor. The operation consisted of omphalectomy, laparotomy in search of further foci of endometriosis in the internal genital organs and in the peritoneal cavity, right adnexectomy, left salpingectomy, and almost total resection of the left ovary to remove left tubo-ovarian endometriosis. The scar of the previous cesarean section was removed during omphalectomy. The authors advise administration of large doses of estrogen or progesterone, or androgens in cases of difficult diagnosis of endometriosis of the navel. The symptoms of umbilical endometriosis increase after administration of the former substances and diminish after administration of the latter. The differential diagnosis is from angioma and melanosisarcoma.

Hydatid Mole and Chorionepithelioma A Five Year Survey of Cases in Three Phoenix Hospitals from 1947 to 1952 H. A. Siegal *Arizona Med* 2 205-212 (June) 1954 [Phoenix, Ariz.]

Siegal reviews observations on 19 patients with hydatid mole, two of whom had chorionepithelioma. These cases occurred between 1947 and 1952 at several hospitals in Phoenix, Ariz., at which 30,659 deliveries took place. There was one case of mole in 1,614 deliveries and one case of chorionepithelioma in 15,329 deliveries. The author feels that the occurrence of signs and symptoms of spontaneous abortion during the fourth and fifth month of pregnancy should lead one to suspect the possibility of hydatid mole, as it appears that the abortion of a mole occurs at a later date in pregnancy than that of the average nonmolar abortion. Hydatid mole should not be ruled out simply because the uterus is not larger than the corresponding period of amenorrhea would justify. In nearly two-thirds of the cases in this series the uterus was smaller or of corresponding size. In molar degeneration, the longer the duration of pregnancy the smaller the uterus appears in relation to the period of amenorrhea. The occurrence of toxic manifestations during the early months of pregnancy might serve as an indicator that an abnormal pregnancy or mole exists. Dilatation and curettage immediately after expulsion or removal of a mole leads to a more satisfactory recovery with a lower incidence of recurrent vaginal bleeding. Cases of spontaneous abortion, especially those in which a fetus and secundines have not been identified, should be followed by curettage, so that hydatid mole, not clinically evident, can be detected and the patients treated accordingly. Persistent bleeding after molar expulsion calls for diligent search for possible chorionepithelioma. Greater reliance should be placed on the biological pregnancy tests especially with a gradually increasing titer. Abdominal hysterectomy seems the best approach in a patient with mole at age 35 or beyond. Hysterectomy may be advisable depending on associated factors. A course of deep x-ray therapy seems advisable following extirpative surgery for chorionepithelioma and biological tests at monthly intervals would appear to be in the best interest of the patient. The author feels that insufficient reliance is placed on biological pregnancy tests both in attempts to establish the diagnosis in suspected cases of mole as well as in the follow-up.

PEDIATRICS

Corticotropin in Rheumatic Carditis Beneficial Effects of High Dosage and Short Duration in Acute Exacerbations of Chronic Rheumatic Carditis N. M. Greenstein, A. M. A. *Am J Dis Child* 87 694-701 (June) 1954 [Chicago]

Twenty-eight children with acute rheumatic fever, ranging in age from 6 to 11 years, were treated with large doses of corticotropin at the Morrisania City Hospital and were observed from March 1951 through August 1953. There were 20 girls and 8 boys. Seven had at least two previous attacks of rheumatic fever. Fifteen had one attack, and in six there was no definite history. All 28 had mitral insufficiency; in 16 it was associated with mitral stenosis, and 3 also had aortic insufficiency. All except five revealed fluoroscopic evidence of cardiac enlargement involving one or more chambers. Of the five children

with normal heart outline, two had both mitral stenosis and insufficiency the other three showed only mitral insufficiency. Each patient was observed for one to seven days before the introduction of corticotropin in order to establish beyond question the diagnosis of rheumatic fever and activity. The children were treated with 300 mg per day of corticotropin, intramuscularly, for a period of 14 to 18 days. All except one of the children responded to this treatment. No significant rebound phenomena or flare-up of rheumatic activity took place on the abrupt cessation of therapy. A small number of mild side effects occurred. Certain characteristic changes in the cardiac silhouette developed during treatment. A follow-up period of 12 to 30 months revealed no increase in the size of the various heart chambers, suggesting that progressive rheumatic activity had been checked or prevented. Complicating, severe liver disease is regarded as the cause of failure in the one patient who did not respond to three courses of corticotropin therapy.

Serum Vitamin A and Carotene Levels in Children with Rheumatic Fever P Wang, H L Glass, L Goldenberg and others. *A M A Am J Dis Child* 87 659-672 (June) 1954 [Chicago]

The nutrition of children in whom rheumatic fever develops has attracted considerable attention, but it has not been explained whether or how suboptimal nutrition, acting in conjunction with other adverse living conditions, such as poor housing, overcrowding, repeated exposures to infections, and less protection from physical and emotional stresses, increases the susceptibility and modifies the response to the disease. In the present study, values of serum vitamin A and carotene were determined in a group of children with rheumatic fever. The effects of diet, of intercurrent infections, and of exacerbations of the rheumatic process, the severity of heart damage, the presence of decompensation, and the effect of the administration of corticotropin (ACTH) on plasma levels of vitamin A and carotene were studied. The rates of absorption and excretion of vitamin A after ingestion of a large test dose were also investigated. The group studied included patients in the acute stage, in the period of gradual convalescence, and, also, patients with inactive disease observed in the outpatient clinic. The authors feel that the diet of the child with rheumatic fever should be supplemented with 3,000 to 5,000 I U of vitamin A. During the acute stage, the need for supplementation is greater, as the child's nutritional intake is often limited during this phase of the disease. High normal values were observed more consistently during the subacute and inactive stages of the disease when vitamin A intake was ample. The aqueous preparation was found to be absorbed more rapidly. No indication was found for giving large amounts of vitamin A, and it is advisable to keep in mind that fat-soluble vitamins are stored in the body and that large amounts taken over a period of time can be toxic. The serum vitamin A level of rheumatic children is found to be decreased under the following conditions: (a) during the acute and early subacute stages of the disease, (b) in patients with severe cardiac damage with passive congestion of the liver, (c) during intercurrent upper respiratory infections, (d) in patients with acute exacerbation of rheumatic processes, and (e) in patients with an inadequate vitamin A and carotene intake of some duration. Corticotropin and cortisone profoundly affect the levels of serum vitamin A and carotene during the various stages of active rheumatic fever. With a few exceptions, vitamin A, either in aqueous or oily medium, was well absorbed by children in varying stages of rheumatic fever. There is no evidence that children with rheumatic fever have a higher vitamin A requirement than normal children.

Neoplasia in Children Neuroblastoma M Salas M Bol. *méd Hosp inf* 11 119-142 (April 1) 1954 (In Spanish) [Mexico, D F, Mexico]

During the last 10 years 16 cases of neuroblastoma in children were observed at the Hospital Infantil of Mexico City. There were 12 boys and 4 girls. Most of the patients were between the ages of 1 and 3 years. The period of evolution of the disease before admission to the hospital varied between two weeks and eight months. In most of the patients the first symptom of the disease was the appearance of the tumor. In the remaining patients

the symptoms consisted of abdominal pain, enlargement of the inguinal lymph nodes, blindness, neurological disorders, and fracture of the ribs. The tumor was located in the adrenals in 12 patients (bilaterally in three), in the retromediastinal or retroperitoneal lymph nodes in three and in the orbit in one. Multiple metastases were observed in all cases, they were enormous in some. The clinical diagnosis was Wilms's tumor in six patients, neuroblastoma in five, and Hodgkin's disease, hepatoma, sarcoma, glioblastoma, and abdominal tumor in one patient each. Surgical treatment failed, and the postoperative period was stormy. Twelve patients died, six probably from operative shock, one each from operative hemorrhage and diffuse peritonitis, three from massive metastases to the lungs, the brain, and the liver, respectively, and one from bronchopneumonia. The period of evolution from the start of the symptoms to a fatal outcome was between 2 weeks and 11½ months.

THERAPEUTICS

Experiences with the Use of 10 Per Cent Aqueous Phenol for Chemical Sympathectomy Preliminary Report E Miles and J S Rothman. *Am J Surg* 87 830-838 (June) 1954 [New York]

Impressed by the encouraging results obtained by Haxton and Boyd in a large number of patients, Miles and Rothman employed 10% aqueous phenol for chemical sympathectomy in 9 men and 2 women with vascular disorders of more than 10 years' duration in the lower extremities (17 limbs). Ten patients had arteriosclerosis obliterans and one had chronic thrombophlebitis. All were either bedridden or almost entirely confined to their homes. With few exceptions they had all received for years a large variety of drugs orally or parenterally without benefit. Most of them had serious medical complications of long duration, namely, hypertension, coronary disease, and diabetes mellitus. The preliminary report by the authors of the results of treatment obtained in the 11 patients confirms almost entirely the original observations by Haxton and Boyd, i e., effective and sustained interruption of lumbar sympathetic outflow could be achieved in most patients so treated. Eight of the 11 patients were improved with sustained elevations of skin temperature of the feet and legs from one to seven degrees Fahrenheit, improved walking ability sustained over six months or more, favorable effects on claudication and resting pain, and 80% diminution of swelling in chronic venous insufficiency. The method is safe and free from serious reactions or painful sequelae when careful technique is practiced. The comparatively simple procedure entailed and the almost entire absence of side-effects should merit further application of this treatment to patients aged over 60 or to those who are surgically poor risks. It is especially indicated for acute closure of peripheral vessels in advanced arteriosclerotics, in whom it may often prove limb saving. In terms of complete cure, one must admit the inadequacy of all therapies currently available, including the surgical.

Study of an Alkaloid of "Rauwolfia Serpentina" in the Treatment of Arterial Hypertension R Herbeuval, G Cuny, M Manciaux and R Guidat. *Presse méd* 62 759-760 (May 19) 1954 (In French) [Paris, France]

The authors used reserpine, one of the alkaloids of *Rauwolfia serpentina*, in the treatment of 35 hypertensive patients. In the 5 whose disease was of renal origin, the drug was a therapeutic failure, but among the other 30, it was effective in 3 out of 5 patients with grade 1 hypertension (60%), in 6 out of 11 with grade 2 hypertension (54%), and in 6 out of 14 with grade 3 hypertension (43%). Reserpine brought about a considerable fall in both peripheral and retinal pressure (but more in the latter), plus the diminution or disappearance of subjective symptoms, a general calming, and a regularization of cardiac rhythm. The treatment is a prolonged one, all patients were treated for at least two months, since it takes at least one month for the blood pressure, which falls substantially directly after treatment is instituted and rises progressively after this initial drop, to level off at about the same figure as existed in the first place, or at a significantly lower one. At this point, success or failure is

adjudged, and the decision made as to whether or not to continue treatment. Some side-effects from the drug were noted—asthenia, dry throat and nasal congestion, edema of the legs, breathlessness, and diarrhea—but it had no toxicity in therapeutic doses. Reserpine possesses a marked neurosedative effect. The authors' impression, from a few cases in which they used combined treatment, is that this drug is a complement to the hydrazinophthalazines and that therapy with both substances is more effective than with either one alone.

Combined Use of Placenta Extract and Vitamins A and D in Local Treatment of Ulcers Caused by Altered Trophism. A. Montagnini and U. Spagnoli. *Prog. med.* 10:229-234 (April 30) 1954 (In Italian) [Naples, Italy]

An ointment containing placenta extract and vitamins A and D (Histoplac) was used to treat 18 patients with ulcers of the lower extremities caused by altered trophism. The lesion was first cleansed with compresses of disinfecting solutions for from 2 to 10 days, then the ointment was applied, and the area was closed with a plaster or bandage. The medication was changed every two or three days depending on the quantity of secretion from the wound. On removing the plaster or bandage, the base of the ulcer displayed marked granulation. It was touched up with a silver nitrate pencil before the medicament was applied again. To better evaluate the effectiveness of the new product, comparative studies were made with other ointments, with or without vitamins, which were applied in the same way on ulcers other than those of the legs in the same patients or in other patients with lesions analogous to those of these patients. The results were good. Twelve patients were cured in a short time while still hospitalized, two were discharged much improved, and, when they were seen a few days later, they were also cured, and the other four were improved, but the late result is not known. Unlike the other ointments the treatment influenced markedly the pain. This was attenuated in all patients and sometimes disappeared in 24 to 48 hours. The granulation process was rapid and the epithelization was also stimulated. The authors ascribe the good effects on pain and the granulation process to the placental extract and those of epithelization to the vitamins.

ANESTHESIA

Experiences with 1,2,3 Tri (Diethylaminoethoxy) Benzene Triethylthiodide (Flaxedil) in Major Surgery. G. Scherer. *Deutsche med. Wchnschr.* 79:612-615 (April 16) 1954 (In German) [Stuttgart, Germany]

Major surgical interventions on the trunk and the extremities, thoracic and thoracoabdominal operations, gastrectomies, choledochal operations, excisions of colon and rectum, prostatectomy, and other urologic operations were performed with the aid of combined anesthesia on 438 patients between the ages of 14 and 82. Premedication was employed with morphine (0.02 gm.) and atropine (0.5 mg.) in divided doses, two hours and one hour before the operation. Anesthesia was induced by intravenous injections of 3 to 4 cc. of one of the barbiturates. With the cannula still in place or by using the continuous intravenous instillation, 20 to 40 mg. of gallamine triethiodide (Flaxedil) was injected. Anesthesia then was continued after intubation, with a mixture of nitrous oxide and oxygen, with or without addition of ether, or with long acting barbiturates. Relaxation of muscles produced by gallamine triethiodide was greatest within four to five minutes, and intubation could be carried out 45 seconds after the injection. Relaxation of muscles of 20 minutes duration was obtained with 40 mg. of gallamine. After 20 minutes a second injection of 20 mg. of gallamine (40 mg. were used only in very strong patients) was given and the duration of its action was again 20 minutes. The effect of the drug was sufficient for 30 minutes on repeated injections. Repeated doses should therefore, be given according to the effect of the drug rather than to time and that particularly in patients with impaired kidneys. Doses of 20 to 40 mg. of gallamine triethiodide were sufficient to obtain relaxation of the muscles

of the abdomen and of the extremities. There were less undesirable side-effects with gallamine than with natural curarizing agents. Considerable variations of blood pressure were not observed, but a temporary increase of pulse rate (20 beats on the average) occurred in 25% of the patients. Liberation of histamine was reduced to one-half or even to one-fifth of that observed with natural curarizing agents. The effect of gallamine triethiodide can be rapidly and safely controlled with neostigmine but, with careful dosage of gallamine, neostigmine can be omitted.

Neurological Complications of Spinal Anesthesia. A Statistical Study of More Than 10,000 Consecutive Cases. M. S. Sadove and M. J. Levin. *Illinois M. J.* 105:169-174 (April) 1954 [Chicago]

A four year study of 10,166 consecutive spinal anesthetics done at a veterans' hospital during the years 1948 to 1951 revealed 18 cases of neurological complications that had some possible connection with spinal anesthesia. Five cases, which are reported in detail, represent conditions frequently blamed as sequelae of spinal anesthesia. When they were carefully analyzed, it was found that they either existed prior to anesthesia and were not aggravated thereby or were completely unrelated to anesthesia. The point is made that it is often an error to give such patients spinal anesthesia; a thorough neurological examination must be made before the type of anesthesia is decided on. The other 13 complications fell into five general categories including 4 cerebrovascular accidents, 3 cases of cardiac arrest, 3 persistent headaches lasting one week or more, 2 cases of chronic backache, and one benign aseptic meningitis. These findings represent the experience of a group of average training in a well-conducted hospital using careful techniques. No attempt is made to draw any conclusions from these data. It is felt, however, that the neurological sequelae of spinal anesthesia are not of sufficient magnitude to warrant the indictments of this anesthetic technique that have been made by those who are opposed to its use, provided results similar to the ones reported here are consistently obtained. The authors' experience has been that the morbidity and mortality of spinal anesthesia compares favorably with those of other anesthetic techniques.

Management of Pain of Malignant Disease with Nerve Blocks. J. J. Bonica. *Anesthesiology* 15:134-145 (March) and 15:280-301 (May) 1954 [Philadelphia]

Bonica practiced nerve blocks on 194 patients with intractable pain caused by neoplastic disease. Narcotic analgesics, cobra venom, intravenous administration of alcohol and non-narcotic analgesics, particularly acetylsalicylic acid, when combined with hypnotics are valuable in the initial mild pain of cancer. Later, when pain becomes persistent, the use of narcotic analgesics is again helpful. Unfortunately, their effectiveness and ease of administration are conducive to improper use. The practice to "snow the patient under because the end is inevitable" denotes lack of understanding. Since it is difficult to estimate the length of life, there may be premature addiction with stupefaction, respiratory depression, headache, anorexia, nausea, vomiting, and cachexia. Because tolerance develops, the patient may not obtain adequate relief in the late stages of cancer when comfort is so essential. Bonica believes that if the patient is in good physical condition, neurosurgical operation should be employed to insure prolonged relief. Rhizotomy, sympathectomy, spinothalamic chordotomy in the upper spinal cord or brain stem, and prefrontal lobotomy relieve intractable pain effectively. These operations impose mental, physical and financial burdens and may cause serious complications and occasionally result in failure. Nerve blocks are primarily indicated for patients who are unsuited or unwilling to undergo surgical procedures. For pain of the face, mouth, tongue, throat, and neck, injections of alcohol into the trigeminal nerve or its branches, the glossopharyngeal and vagus nerves and/or the upper cervical spinal nerves are usually very effective. Pain below the neck can be

controlled for weeks or months with subarachnoid alcohol block, paravertebral block or injections into the peripheral or intercostal nerves. Since the sympathetic nervous system is often involved in the pain mechanism, sympathetic nerve blocks may be necessary to control the pain completely. Of the 194 patients with severe cancer pain treated with analgesic block, 52.7% obtained complete relief, 33.5% partial relief, and the remainder obtained minimal or no relief. Minor complications occurred in 21.1% of the patients and serious complications in 14.9%. These complications included corneal ulcers in 4, unilateral mastectomy weakness in 22, weakness or paralysis of extremities in 26, bladder or rectal dysfunction in 12, alcoholic neuritis in 7, and orthostatic hypotension in 1.

Controlled Hypotension During Surgery H. H. Stone, Maryland M. J. 3:163-166 (April) 1954 [Baltimore]

Stone points out that interest in controlled hypotension during surgery was renewed after World War II, partly due to the increase in the extensive types of surgical resections. Some induced hypotension by removing blood from the patient and reintroducing it subsequently. Others produced hypotension by the use of spinal anesthesia. In 1948 with the introduction of a group of drugs with potent autonomic ganglionic blocking properties known as the methonium compounds, hypotension could be produced without the cumbersome technique of spinal anesthesia or the uncertainties of arteriotomy. Tetramethonium, pentamethonium and hexamethonium supplanted other hypotensive agents. The method gained popularity in Great Britain and soon spread to the United States. The factors that influence the ability of the body to make a satisfactory compensation in terms of maintained organ blood flow are the duration and degree of hypotension, the condition of the blood vessels, the metabolic needs of the tissues during hypotension, especially those of the heart and brain, and the production and liberation of specific depressant substances arising from ischemic tissues. The effect of the reduction in mean arterial blood pressure by hexamethonium on the circulation of the heart, brain, liver, and kidneys was studied experimentally, and the results are presented. Many complications have been reported incident to the use of controlled hypotension, but the incidence of these complications is very difficult to establish on a cause and effect basis. Too many complex factors could influence their development. Their incidence is significantly greater when the level of the systolic blood pressure is maintained below 80 mm Hg. A survey of 21,000 cases in which induced hypotension was used, revealed 46 deaths attributable to the method, or an incidence of 1 in 459 cases. The incidence of complications was vastly higher (549) or 1 in 38 cases. Since the majority of the complications encountered are referable to derangements of function of the brain, heart, and kidney, it appears unwise to use controlled hypotension in aged, sclerotic patients who give a history of coronary, cerebral, or renal insufficiency. Hypotension is potentially dangerous and the indication for its use must outweigh its serious implications. The decision to use controlled hypotension should be made by the surgeon not the anesthesiologist.

Hypothermia K. K. Keown, B. A. Cookson, D. F. Downing and C. P. Bailey, Maryland M. J. 3:160-162 (April) 1954 [Baltimore]

Keown and associates repeated the induction of hypothermia in animal experiments with a view of perfecting a technique suitable for application in patients with intracardiac defects. These experiments proved that (1) the circulation could safely be interrupted for 12 minutes while open cardiectomy was accomplished at a temperature of 78.8 F, (2) it is possible to control bodily temperature by means of slow cooling, (3) arterial transfusions are helpful in the prevention of coronary air embolization, (4) citrated whole blood predisposed to ventricular fibrillation in a cold heart, due to a calcium-potassium imbalance, (5) the heart rate and blood pressure are lowered in almost direct proportion to the decrease of the body temperature, and (6) application in human beings seems feasible. The authors induced hypothermia in four infants less than 6 months of age, who received no depressant drugs other than small doses of meperidine (1 mg per pound of body weight). Open thoracotomy was performed, and there was no evidence of neurological damage in the two infants

who survived. Children older than one year of age are anesthetized with thiopental (Pentothal) sodium given intravenously until unconsciousness is reached, then the endotracheal catheter is passed to assure a patent airway. Immediately after tracheal intubation a thermocouple is inserted into the rectum of the patient and checked for accuracy. The dial of the thermocouple is attached to the anesthesia machine so that the decrease in temperature can be observed constantly. The electrodes of the electrocardiograph are applied and the patient is placed on a refrigeration mattress. About 60 to 90 minutes are required to lower an infant's rectal temperature to 74 F. When a bodily temperature of 82.4 F is reached, voluntary respiratory activity ceases, then the anesthesiologist must assume control of respiratory activity. During rewarming, respirations again become spontaneous at the same temperature. The electrocardiographic tracings show progressive changes. Immediately following surgery, rewarming is started by circulating warm water through the coils in the blanket. Most infants will respond satisfactorily in a recovery room, and will have a normal temperature within 10 hours. It has been possible to interrupt the circulation of an infant completely for as long as 22 minutes without evidence of renal, hepatic, cerebral, or cardiac damage. The authors believe that hypothermia is indicated in infants who require cardiac or extracardiac great vessel surgery, in operations that require a complete interruption of the circulation, and in major surgery of any type in debilitated infants or children. They regard the use of hypothermia as contraindicated in the presence of acquired heart disease, poor myocardial tone and defects, and also in noncyanotic infants and children for operations not requiring the interruption of the circulation.

Hypothermia, Ganglioplegics, and Homoplastic Skin Grafts. V. Bergonzelli and C. Orecchia, Arch. sc. med. 79:261-267 (March) 1954 (In Italian) [Turin, Italy]

Experiments were carried out on guinea pigs to determine the eventual interference of the autonomic nervous system with the survival of homoplastic grafts. A homoplastic graft of total skin was made on the abdomen of some guinea pigs that served as controls. In other animals the graft was made after prolonged administration of ganglioplegics, in a third group after hypothermia was induced (rectal temperature of 34 to 35 C [93.2 to 95 F]), and in the last group after the effects of hypothermia were potentiated by administration of ganglioplegics (rectal temperature of 32 to 33 C [89.6 to 91.4 F]). The length of survival of the grafts was not influenced greatly by the administration of the ganglioplegics alone, and these combined with hypothermia represented a danger to the life of the animals, four of which died. The length of survival of the grafts was greatest in the group of animals subjected to hypothermia. In these the grafts lasted as long as three weeks as compared to 10 days in the controls. The authors attribute these favorable effects to a slowing down of the metabolic exchange in the tissues and a reduction of the reactive processes of the organism around the graft.

PHYSIOLOGY

Synovial Fluid. I. Comparison of Sodium and Potassium Concentrations in Normal and Diseased Joint Fluid. K. L. Yielding, D. Platt and H. L. Holley, Proc. Soc. Exper. Biol. & Med. 85:665-667 (April) 1954 [Utica, N. Y.]

Previous investigations on synovial fluid have utilized material obtained from cattle, horses, dogs, edema effusions, and human autopsy material. For the studies described here, synovial fluid samples were aspirated from the knee joints of 10 healthy living persons, 10 autopsy cases, 25 patients with effusions in untreated acute rheumatoid arthritis, and 5 persons with osteoarthritis with effusion. It was found that, by allowing the subjects to remain inactive for 8 to 12 hours prior to the procedure, volumes of fluid up to 1 cc could be obtained from the knee joint. A 20 gauge needle was introduced under the medial border of the patella directly into the joint cavity. Prior infiltration of the skin with 1% procaine made the procedure relatively painless. The sodium and potassium concentrations were determined in the synovial fluid specimens as well as in the serum. In the

synovial fluid obtained from patients with rheumatoid arthritis, there was an increase in sodium concentration with a corresponding increase in the synovial fluid serum ratio for sodium. The increase in the sodium concentration in the joint fluid of patients with rheumatoid arthritis as compared to that found in normal fluids appears to be statistically significant, the more so, since the serum values were essentially equal in normal subjects and in those with rheumatoid arthritis. There appear to be at least three possible factors affecting the alteration in the electrolyte concentrations of synovial fluid in diseased states—alteration of protein content, qualitative and quantitative alteration of the polysaccharide component of the fluid, and changes in permeability of the synovial membrane. It has been shown electrophoretically that the total protein content, and especially the globulin fraction, is increased in the joint fluid in rheumatoid arthritis.

The Effect of Potassium Chloride on Hyponatremia J. H. Laragh. *J Clin Invest* 33 807-818 (May) 1954 [New York]

An abnormally low concentration of sodium in serum and extracellular fluid often occurs in cardiac edema and in other states characterized by excessive retention of fluid. Rigorous sodium restriction, mercurial diuretics, and cation-exchange resins may exaggerate or produce this tendency. Sodium administration often enhances accumulation of fluid. Hypertonic sodium chloride, though effective at times, may be neither beneficial nor safe. Because hyponatremia per se may play a role in the production of adverse symptoms, it seemed desirable to search for another diuretic agent that might promote the loss of excessive body water without aggravating disturbances in sodium metabolism. Potassium chloride was administered orally to hyponatremic patients with and without edema. In these patients, small to rather striking increases in the serum sodium concentration were observed without the addition of exogenous sodium. The nature of the phenomenon is not wholly clarified but seems best explained by a release of sodium from cells in exchange for potassium. In the edematous hyponatremic subject, no significant change in renal excretion of sodium or water was observed after potassium chloride administration, even when serum sodium levels were simultaneously raised toward normal. This occurred with both low and higher sodium intakes. The hyponatremic patients studied seemed unable to metabolize potassium with normal facility, and, therefore, its administration is not without hazard, when compared to normal subjects the hyperkalemia produced seemed to be more profound and more prolonged. Moreover, with the doses employed in this study, potassium chloride did not exert a diuretic action.

Consumption and Selection of Food in Competitive Lumber Work M. J. Karvonen and O. Turpeinen. *J Appl Physiol* 6 603-612 (April) 1954 [Washington, D. C.]

Lumberjacking is an occupation involving highest caloric expenditures. During working competitions the amount of wood cut per day may amount to three times that cut by an average lumberjack. It may be asked whether the calories required by the competitive work can be adequately covered by food intake, or whether the high intensity of work leads to a loss of weight. A study was made of the consumption and selection of food during the Finnish National Woodcutting Competition in November 1951. The mean caloric value of the food intake was $5,460 \pm 750$ calories per day. The calorie intake was not significantly correlated with the performance. During the competition there was an average weight loss of 1.2 ± 1.5 kg. The weight loss and the performance showed a positive correlation. The selected diet consisted of $46.6 \pm 4\%$ carbohydrate, $41.6 \pm 3.3\%$ fat, and $11.8 \pm 1\%$ protein. On the whole, the figures obtained in the present study and those published for ordinary lumberman's work are similar, indicating that the competitors attained their top performances essentially through more economical methods and not through a higher energy expenditure. The fat content of the diet of the competitors was exceptionally high—42% or 264 gm. The United States National Research

Council recommends a fat intake equivalent to 30 to 35% of the total intake of calories for persons using more than 3,000 calories per day. The high fat intake may be explained by the cold climate and the heavy work, or both. However, the diet of the classes from which the majority of the competitors came, is not characterized by a particularly high fat intake. It was evident that the work was the main factor in the selection of a diet rich in fat, obviously a bulky meal would be an obstacle to the efficiency of a man who does heavy labor often in an uncomfortable position. The fluid to replace the loss of sweat was taken mostly during work. Many of the competitors had learned to use drinks combining fluid and calories. Warm milk fortified with sugar was a favorite drink. In long distance ski running, the skiers also are advised to take milk with sugar at frequent intervals. This method agrees with the recommendations of recent physiological research for the continuous replacement of water loss in dehydration and carbohydrate in muscular work.

Artificial Respiration by Mouth-to-Mask Method: A Study of the Respiratory Gas Exchange of Paralyzed Patients Ventilated by Operator's Expired Air J. O. Elam, E. S. Brown and J. D. Elder, Jr. *New England J Med* 250 749-754 (May 6) 1954 [Boston]

Mouth-to-mask or mouth to tracheal-tube ventilation was performed on nine adult surgical patients in the immediate postoperative period before recovery from general anesthesia. Expired carbon dioxide and respiratory flow were first recorded to establish control values. The total volume of the inflation and expiration of the patient passed through the carbon dioxide analyzer and pneumotachograph. During artificial ventilation, the operator's alveolar carbon dioxide pressure was also recorded with each inflation of the patient's lungs. An intravenous drip of succinylcholine in sodium chloride solution was started, and the rate of infusion adjusted to produce cessation of respiratory flow. At the onset of apnea as indicated by the pneumotachograph record, mouth-to-mask or mouth-to-tracheal-tube ventilation was instituted. An anesthesia mask with 110 cc of dead space was fitted over the patient's nose and mouth and held securely by bilateral manual support. The operator took a deep breath of ambient air, applied his lips around the ferrule of the mask, and inflated the patient's airway and lungs until lift of the upper chest was observed. The operator then removed his lips from the mask, turned his head to one side and inspired ambient air while the patient exhaled through the mask. Either the rate or the volume of inflation was decreased if the operator experienced dizziness. The same method was used for performing mouth-to-tracheal tube ventilation, except that the carbon dioxide analyzer and pneumotachograph were interposed between the patient's endotracheal tube and the operator. After an interval of five to 30 minutes of artificial ventilation, arterial samples were collected. Van Slyke analyses of oxygen content and capacity and carbon dioxide content were completed within three hours of arterial sampling. pH measurements were started within five minutes. Normal respiratory blood gas exchange of the patient was consistently produced by mouth-to-mask or mouth-to-tracheal-tube ventilation. These results appear to be sufficient to establish the general applicability and adequacy of the method. The efficiency with which ventilation by expiratory inflations reestablished normal oxygen and carbon dioxide exchange of the patient was striking. The operator knew immediately whether the patient was being ventilated. Sufficient inflating pressure was automatically exerted to ensure delivery of an adequate volume, since the operator tended to compensate for changes in airway resistance and in lung compliance. The method appears to be the ideal emergency procedure for artificial ventilation because the patient's alveolar oxygen pressure can be rapidly elevated and normal pulmonary gas composition can be rapidly established. Preliminary evidence suggests that for prolonged periods of mouth-to-mask ventilation hypocapnia in the operator can be prevented by the imposition of additional external dead space on the operator. The potential hazard of rupture of the lung in patients with small or abnormal lungs may be excluded if inspiratory inflation is terminated when there is perceptible expansion of the chest.

BOOK REVIEWS

Laboratory Aids in Endocrine Diagnosis By Roberto F. Escamilla, M.D. Associate Clinical Professor of Medicine, University of California Medical School San Francisco. Publication number 212, American Lecture Series monograph in Bannerstone Division of American Lectures in Endocrinology, edited by Willard O. Thompson, M.D. Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Cloth \$4.75. Pp. 131 with 21 illustrations. Charles C. Thomas Publisher, 301 327 E. Lawrence Ave., Springfield, Ill. Blackwell Scientific Publications Ltd., 49 Broad St., Oxford, England, Ryerson Press, 299 Queen St. W., Toronto 2B, Canada, 1954.

This monograph covers both routine and special clinical laboratory procedures that may be helpful in the diagnosis of endocrine diseases. The tests include pertinent chemical analyses of the blood and urine reactions to clinical reagents or drugs, the use of devices, such as for basal metabolism and x-ray, and pathological techniques for the study of stained smears and biopsy specimens. A final chapter provides an index to those tests that are considered important, occasionally helpful, or of incidental interest. No general index is provided, but the smallness of the book makes this deficiency relatively unimportant. The table of contents at the beginning is sufficiently detailed to permit ready access to the main text. Details of laboratory procedures for routine analyses and for roentgen techniques are omitted. Some of the information provided can be found in texts that cover the general subject of clinical diagnosis by laboratory methods. In some instances the author uses trade in place of generic names for drugs. Reference that is made to the "benzodioxane" test should be "piperoxan (or Benodaine)" test. Reference to the "Regitine" test is accurate, but could be improved by similar treatment as "phentolamine (Regitine)" test. The printing, paper, and binding are excellent. Clinicians in general should find the book useful chiefly for convenient reference in the diagnostic study of endocrinopathies.

The Alkaloids: Chemistry and Physiology. Volume IV Edited by R. H. F. Manske and H. L. Holmes. Cloth \$8.50. Pp. 357. Academic Press Inc., 125 E. 23rd St., New York 10, 1954.

The next-to-the-last volume of this valuable series covers drugs having an isoquinoline structure, i.e., alkaloids of anhalonium, cactus, protoberberine, aporphine, protopine, and cularine, as well as simple isoquinolines and the benzylisoquinoline, bis-benzylisoquinoline, and α -naphthaphenanthridine alkaloids. Two chapters are given to alkaloids of erythrophleum and of aconitum and delphinium, whose structures are not yet known. The chapters are written by experts in their fields. Several chapters include sections on pharmacology. As is the case with the other volumes in the series, there are bibliographies at the ends of the chapters, author and subject indexes, and clear structural formulas. The book is well produced.

Population Statistics and Their Compilation By Hugh H. Wolfenden. With appendix on Some Theory in the Sampling of Human Populations by W. Edwards Deming, Ph.D. Second edition. Cloth \$7.50. Pp. 258. Published for Society of Actuaries by University of Chicago Press, 58th St. and Ellis Ave., Chicago 37, 1954.

This is a revised edition of a standard reference work on methodology for the advanced student of vital statistics. A number of developments have occurred in the theoretical and practical problems involved in the compilation of population statistics since this book was first published under the same title as "Actuarial Study No. 3" in 1925; this edition has been rewritten and enlarged to include descriptions and references covering new material. The book is concerned primarily with the methods of compiling various types of population statistics that are of value to the actuary and is complete and comprehensive in its treatment of the historical and actuarial-mathematical problems of population statistics. An outline of the history and principles of census-taking and birth, marriage, and death registration in various countries, an analysis of the reliability of census and registration statistics, procedures for estimating populations, the validity of population projections and the theory of reproductivity, and

development of mathematical relationships between births, deaths, population, and the formulae for mortality rates are included in this book. The material on the graphic, curve fitting, and interpolation methods of constructing mortality tables includes the latest developments in tangential and osculatory interpolation, as well as the use of linear compounding coefficients to minimize the mean square error in a specified order of differences. Discussions of methods of constructing abridged life tables and comparing mortality rates in different communities also include the most recent procedures.

An Atlas of Congenital Anomalies of the Heart and Great Vessels By Jesse E. Edwards and others. Cloth \$13.50. Pp. 202 with 272 illustrations. Charles C. Thomas Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., Blackwell Scientific Publications, 49 Broad St., Oxford, England, Ryerson Press, 299 Queen St. W., Toronto 2B, 1954.

In this great medical atlas, the description of each anomaly is aided by photographs of models in color, photographs of the actual specimen, diagrams, roentgenograms, electrocardiograms, and in many instances data derived from cardiac catheterization and other significant clinical data. To assemble such a book required a tremendous amount of work and could have been done only by a closely integrated group such as this one from the Mayo Clinic. Several anomalies such as Ebstein's malformation of the tricuspid valve, Marfan's syndrome, and anomalies of the coronary arteries are added in this new edition. The authors have wisely kept the clinical data to outline form and have refrained from discussing treatment. The book describes as clearly and concisely as possible each congenital defect. Those interested in medical history will be pleased with the section of short biographical sketches and pictures of the important persons in the field. A carefully selected bibliography includes most of the important literature in the field of congenital heart disease. This atlas should be available to every physician for ready reference.

Man Above Humanity: A History of Psychotherapy By Walter Bromberg, B.S., M.D. Foreword by Winfred Overholser, M.D., Sc.D. Cloth \$5.75. Pp. 342, with 16 illustrations. J. B. Lippincott Company, 227 231 S. Sixth St., Philadelphia 5, Aldine House, 10-13 Bedford St., London, W.C. 2, 2083 Guy St., Montreal, Canada, 1954.

This history traces psychotherapy from the Stone Age to the present and discusses magic, faith-healing, witchcraft, early asylums for the insane, Christian Science, rest cures, animal magnetism, hypnotism, various modifications of psychoanalysis, mental hygiene, and group methods of psychotherapy. The author in his preface states that this is a rewriting of his earlier book entitled "The Mind of Man," published in 1937. The present title is taken from a quotation in Seneca's "Naturales Quaestiones." The author believes the factors entering into psychotherapy must always include "the primitive sense of magic, an aspect of faith displaced to the therapist and a re-enactment of infantile feelings within the transference situation." The best chapter is that on mental hygiene. There is an index.

Emotions and Reason By V. J. McGill, Associate Professor of Psychology and Philosophy, Hunter College, New York. Publication number 215, American Lecture Series monograph in American Lectures in Philosophy, edited by Marvin Farber, Ph.D. Cloth \$3.25. Pp. 122. Charles C. Thomas Publisher, 301-327 E. Lawrence Ave., Springfield, Ill. Blackwell Scientific Publications, 49 Broad St., Oxford, England, Ryerson Press, 299 Queen St. W., Toronto 2B, 1954.

This monograph begins with the proposition that "The two main determinants of human behavior are motivation and ability, and there is a growing conviction that the two cannot be profitably separated." The author's subsequent thesis, insofar as it can be detected, is that emotions and reason are similarly interrelated. Unfortunately, these portmanteau terms are made to carry so many other concepts equally vague or inclusive that readers may have difficulty in following the ensuing vagaries of thought and exposition. This volume is recommended for those who like metapsychological polemics, but it will, on the whole, furnish little useful information to the medical practitioner.

QUERIES AND MINOR NOTES

CALCIUM "SHOTS"

TO THE EDITOR—Many of my patients want calcium 'shots' because they have a friend who has been getting calcium shots. In few of these patients am I able to find any sign of calcium deficiency. I send them to the hospital laboratory for blood calcium determinations and they are always reported within normal limits. Is there any rationale for the widespread use of calcium shots and even calcium by mouth except for the presence of known calcium deficiency?

J Street Brewer, M D, Roseboro N C

This inquiry was referred to five consultants, whose respective replies follow—ED

ANSWER—Strictly speaking the rationale for calcium therapy is to combat a calcium deficiency state. Under normal conditions the amount of calcium in the body remains constant. The activity of the parathyroid glands is closely related to the behavior of calcium in the body. The highest calcium requirements are observed during infancy, early adolescence, pregnancy and lactation, and menopause. The functions of calcium are numerous. It is essential for ossification of bone, for adequate contraction of cardiac muscle and for normal blood clotting; it diminishes capillary permeability, and it decreases the excitability of the autonomic nervous system. Nature attempts to keep the concentration of calcium in the blood at a constant level. In the investigation of diseases in which abnormalities in calcium metabolism are suspected, it is desirable to determine a concentration of serum protein and serum phosphatase in addition to the concentration of calcium and inorganic phosphates in the serum.

ANSWER—When the bones are well calcified and the blood levels of calcium, phosphorus and total protein are normal there seems to be little justification for the giving of calcium salts. Injected calcium is promptly lost from the blood stream and much of it is either stored in the bones or excreted. The situation is quite different when there is a metabolic drain on the calcium stored in bones or when the blood levels are low. When calcium is restricted in the diet by eliminating milk, eggs and green vegetables or when absorption of calcium is reduced by diarrhea or other intestinal disease, then parenteral calcium has some justification.

ANSWER—It is very rarely that calcium must be given intravenously. Tetany of the low serum calcium variety is the only indication that comes to mind and here it is seldom necessary. It is not indicated in any form in osteoporosis or osteomalacia; it may be beneficial by mouth. In pregnancy it is not indicated by either route.

ANSWER—There is widespread unwarranted use of calcium compounds given parenterally. This practice is promoted by certain manufacturers of calcium compounds prepared for this purpose. The indications for use of calcium compounds are well stated in "New and Nonofficial Remedies" (1954 page 484) as follows: Calcium salts are specific in the treatment of hypocalcemic tetany. Vitamin D or parathyroid hormone may also be indicated according to the etiology involved. In severe tetany parenteral administration, preferably intravenous, is indicated to bring symptoms under rapid control. Latent tetany or mild symptoms may be controlled by oral medication. There is little or no justification for parenteral administration of calcium compounds except as an emergency measure. Oral administration in known calcium deficiency may be a matter for individual judgment as a rule a remedial diet is preferable to the ad-

ministration of calcium compounds. The answer to the query is an unqualified no!

ANSWER—The understanding of calcium metabolism is so complex and its disturbance so difficult to classify that to empirically administer calcium "shots" is not medically sound. There is a dire need for certain studies to be made, for there are many cases of disturbance of calcium metabolism undiagnosed and poorly understood. The studies would include urinalysis, particularly for Bence-Jones protein; blood calcium, phosphorus, and phosphatase; total serum protein with albumin-globulin ratio; blood smears (rouleau); sedimentation rates and roentgen studies of bone and gastrointestinal and genitourinary systems. Especially, one must understand the close relationship of calcium and phosphorus, the importance of the functional state of the parathyroid glands, the function of the enzyme phosphatase and the use and action of dihydrotachysterol, vitamin D and parathyroid. In summary, calcium administration and methods of maintaining calcium balance are well founded if they are supported by careful diagnostic studies.

GLARE REDUCTION AND DEPTH PERCEPTION TEST

TO THE EDITOR—What is a simple and reliable test for glare recovery and depth perception suitable for office practice?

Karl J Chiapella M D Chico, Calif

ANSWER—Berens and Zuckerman (Diagnostic Examination of the Eye Philadelphia J B Lippincott Company, 1946) discuss several simple methods of testing for glare recovery and depth perception. In testing for glare recovery the patient should be directed to look for three minutes at a bright light (two bulbs of 5400 millilamberts each) placed 3 ft away. The patient should then be placed in a dark room 18 in from a test light (0.004 millilamberts). This standard test light is admitted to a narrow aperture measuring $1\frac{1}{8}$ in in a cylindrical tube. Recognition of the direction of the slit is a check of the accuracy of the patient's response. The patient is directed to look directly above or below the test light but not directly at it. He then states when he is able to see the light. Normally 60 seconds elapse between the time the bright lights are turned off and the time the test light is recognized. A longer interval suggests a decreased ability to regenerate visual purple. Several commercial devices are available for the measurement of depth perception. One simple method is to direct the patient to touch with a 20 mm white ball inserted in a wooden rod 1 m long another white ball of the same size at the end of a similar rod, which the examiner holds in his outstretched arm. This test should be repeated in all fields of fixation while the patient's head is prevented from moving so he fixes only by movement of his eyes.

LIGATION OF THE VASA DEFERENS

TO THE EDITOR—Precisely what happens when the vasa deferens are ligated during a prostatectomy? What is the effect on the testes and endocrine system?

Joseph G Lee M D Los Angeles

ANSWER—When the vasa deferens are ligated at the time of either a transurethral resection of the prostate or an open prostatectomy the only thing that happens is a severance of the channel that conducts the sperm from the testis and epididymis to the ejaculatory duct in the posterior urethra. There is no evidence of any kind on careful research to show that the testis or the endocrine system is in any way affected by this procedure. Spermatozoa continue to form in the testis for as many years as we know after this has been done and if the vasa are reunited successfully normal sperm will pour out again through these channels to be ejaculated in the usual manner.

The answers here published have been prepared by competent authorities. They do not however represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address but these will be omitted on request.

PREGNANCY AND BREAST CANCER

TO THE EDITOR—*Should sterilization be performed after radical mastectomy in women who are still menstruating? If the answer is yes should it be accomplished by irradiation or surgery? Also is therapeutic abortion indicated in a woman who becomes pregnant after a radical mastectomy for cancer of the breast?*

M.D., New York

ANSWER—There is still much difference of opinion concerning castration following radical mastectomy for carcinoma. Some surgeons believe that castration should be performed and that removal of the ovaries is far better than radiation castration. Operative sterilization without stopping ovarian function is not recommended. Cheek (*Arch Surg* 66:664 [May] 1953) says the prognosis for patients with cancer of the breast developing during pregnancy, though poor, need not be invariably hopeless. Occasional instances of five year cures have been reported. Pregnancy is not a factor that in itself, would cause the disease to be inoperable. Termination of pregnancy seems to be indicated particularly if the growth is discovered during the first half of gestation and if there is no serious conflict with religious tenets of the family. However, White (*Ann Surg* 139:9 [Jan] 1954) who analyzed 920 cases, says that abortion cannot be shown to have a clear effect on the survival rate. There is general agreement that subsequent pregnancies should be avoided by women who have had mammary carcinoma. Whether pregnancy increases the chances of carcinoma developing in the remaining breast remains unsettled. Any hope for an improved prognosis of carcinoma of the breast during pregnancy lies in early diagnosis, when the growth is still clinically operable. For this reason physicians should examine the breasts of their patients completely and at frequent intervals.

ALLERGY TO FISH

TO THE EDITOR—*Is there any way to desensitize a 5-year-old child who is extremely allergic to fish? Hives and asthma develop when she smells fish or when she is in a room in which fish has been fried. On one occasion she ate a small piece of fish and became comatose and cyanotic and had a rapid, thready pulse. These symptoms are relieved fairly promptly by an intramuscular injection of methapyrilene (Histadyl) hydrochloride. Antihistaminics have been tried but do not prevent the attacks.*

Charles H. Brant, M.D., Wooster, Ohio

ANSWER—Most allergists agree that desensitization to foods by giving injections of the antigen is not successful nor practical. Allergy to fish is one of the most violent types of hypersensitivity. Not only would injections of fish antigens be hazardous, but it is doubtful that the degree of desensitization accomplished would be sufficient to influence the clinical symptoms. In this case preventive measures are the only means of avoiding trouble. In case of a severe reaction the prompt administration of epinephrine hypodermically is advised. Most likely this sensitivity will persist throughout the patient's life.

REMOVAL OF BROKEN HYPODERMIC NEEDLE

TO THE EDITOR—*Can a hypodermic needle that has been accidentally broken off into the tissues be removed with a powerful magnet?*

Leon Banov, M.D., Charleston, S.C.

ANSWER—The best treatment is prevention. Rarely does the shaft of the needle break, but rather the needle breaks at its joint with the shank. If the needle never is inserted to its full length, even breaking off will not result in losing the needle in the tissues. It is feasible to use the Lancaster eye electromagnet (medium-size hand model) to remove broken needles lost in the tissues within limitations. The magnet will not, however, pull out needles unless they are at an acute angle with the skin surface. Furthermore, there must be actual contact between the magnetic applicator and the needle. This usually means that a small incision must be made through the skin, then the probe-type tip (pencil-lead size) can be inserted to find the needle. Since an incision must be made, it is almost as easy to grasp the needle with a hemostat and withdraw it, except that the magnet may obviate tissue exploration. The magnet will not

remove a needle parallel with the skin, nor will it pull an end on needle through intact skin. Good contact between needle and applicator is necessary. All in all, the magnet is effective only part of the time and does not obviate a skin incision.

SILICOSIS

TO THE EDITOR—*Once there is roentgenologic evidence of silicosis, will progression continue to take place even though there is no further exposure to free silica? It is assumed that tuberculosis is not superimposed. Also, how essential is it to avoid further exposure to silica once there is evidence of silicosis?*

A. M. Phillips, M.D., Warwick, R.I.

ANSWER—After the detection of roentgenologic evidence of silicosis, it does not always follow that progression takes place. Further roentgenologic examination over such intervals as six months should be conducted in order to ascertain whether progression is occurring. No workman with or without silicosis should be subjected to significant exposure to silica. It becomes desirable in all instances to reduce the exposure at the work point below that serving as a threat of silicosis. Thereafter, even those workers with known silicosis, if of nondisabling degree, may continue working.

INJECTION OF ESTROGENS INTO ANIMALS USED AS FOOD

TO THE EDITOR—*Is it safe to caponize male chickens by injecting 12 mg of diethylstilbestrol into the neck tissues and placing these birds on the market within two months for home consumption? I understand that hormones are injected into female birds, including turkeys, and into cows. What about remote carcinogenic effects?*

M.D., New Jersey

ANSWER—There is no reason to believe that the administration of estrogens including diethylstilbestrol in animals or birds should render the meat unfit for consumption. Adequate evidence indicates that these hormones are completely metabolized into inactive components within a few hours. There is no conclusive evidence that the estrogens ordinarily used are carcinogenic in man in therapeutic amounts.

PULSATING MIDDLE-EAR FLUID

TO THE EDITOR—*I have observed in several cases of acute otitis media with spontaneous perforation the fluid pulsating as it extrudes through the perforation. I suppose this represents transmitted pulsation from the dilated blood vessels of the inflamed middle ear, but I am surprised that such pulsation should be so macroscopic. Is it so frequent as it seems to me, and is there a more probable explanation?*

Frank C. Leitnaker, M.D., New York

ANSWER—Pulsation of the discharge from an acute otitis media is undoubtedly the result of vasodilatation in the middle ear mucosa and occurs when the middle-ear spaces are completely filled with fluid so that the pulsation in the arterioles in this rigid bony cavity must necessarily be transmitted to the fluid escaping through the tympanic membrane perforation.

ELECTRIC SHOCK

TO THE EDITOR—*I would like your opinion on the use of stimulants in recession from electric shock. Clinical and experimental evidence shows that the use of epinephrine is contra-indicated, however, I would like to know whether or not the use of nikethamide (Coramine), caffeine, or some similar stimulant is indicated, or should all the stimulants be avoided?*

Howard P. Knapper, M.D., St. Petersburg, Fla.

ANSWER—In electric shock, the heart is usually in fibrillation due to a lack of blood in the heart itself. The blood has accumulated in the blood vessels of the abdomen, hence, an attempt should be made to stimulate the vasoconstrictors by pressure that might force blood into the heart. Until the heart is out of fibrillation, all stimulants are contraindicated, with the exception of carbon dioxide, which is a respiratory stimulant. Personal experience with all stimulants has been unsatisfactory.

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PULMONARY EMBOLISM

INCIDENCE AND SIGNIFICANCE

Abe Towbin, M D, Columbus, Ohio

Pulmonary embolism becomes an increasingly important problem as the extent of its incidence becomes unveiled. Although the subject of much study, the incidence of pulmonary embolism has remained a matter of uncertainty and disagreement. Pulmonary embolism is reported by some as being infrequent, it may, in fact, represent one of the most important forms of terminal illness, one of the commonest causes of death in the population at large. The diagnosis of pulmonary embolism is difficult and equivocal. The disease is usually portrayed as being of sporadic occurrence, although this conception is deeply rooted in medical opinion, it is open to question. To obtain an exact measure of the incidence of fatal pulmonary embolism in the general population, two conditions must be fulfilled: the evaluation must be based on autopsy examinations and a high percentage of the deaths in a given community over a period of years must be examined. The disagreement in the literature regarding the incidence of pulmonary embolism stems from the fact that it has been difficult to provide circumstances in which these conditions could be fulfilled.

POSSIBLE APPROACHES TO PROBLEMS

Studies of pulmonary embolism in the past, despite the variable factors encountered and despite the difficulties in obtaining comprehensive data, have contributed important information. The incidence of pulmonary embolism continues to be studied intensely in many clinics. In previous surveys of thromboembolic disease of the lung, recourse has generally been had to three avenues of investigation: vital statistics, clinical studies of cases diagnosed in the hospital, and general hospital autopsy studies. These methods, because of their inherent limitations, do not provide conclusive cross-sectional data of the incidence of pulmonary embolism in the general population. In pursuit of this problem, a fourth method, the autopsy study of persons in custodial institutions, is offered in the present work.

Vital Statistics—Vital statistics, as generally registered, are unacceptable as an indicator of the incidence of pulmonary embolism because of inevitable errors in

deathbed diagnosis and inadequate number of autopsies. Members of the older age group, in large proportion, remain at home during their terminal illness, at death, which is often ascribed to "natural causes," autopsy is not performed. Definite information regarding the nature and incidence of terminal illness is buried with the remains and lost forever. A survey of vital statistics shows that the diagnosis of pulmonary embolism is rarely made by physicians in deaths occurring at home. In the vital statistics of the city of Columbus, Ohio, in 1951, 3,958 deaths representing all ages were registered, of these deaths, slightly over one-half, 2,133, occurred in hospitals. Pulmonary embolism was diagnosed in 62 cases, or 2.91% of hospital deaths. In deaths that occurred at home, the diagnosis was considered in 0.76% of cases, these vital statistics indicate that the diagnosis of pulmonary embolism was made only one-fourth as often in home deaths as in hospital deaths. Significantly, most of the hospital cases of pulmonary embolism occurred in medical patients, few were surgical. In most cases the nature of the terminal illness was unrecognized clinically, the diagnosis being established only after autopsy. It is likely that the fourfold difference in frequency of fatal pulmonary embolism registered in these vital statistics reflects discrepancies in diagnosis rather than a true difference in incidence of pulmonary embolism in hospitalized and nonhospitalized patients. These data derived from the vital statistics emphasize that in medical practice there is a general unawareness of the frequency of pulmonary embolism.

Clinical Surveys—Clinical surveys, the second method of analyzing the incidence of pulmonary embolism, have been made of patients with pulmonary disease admitted to general hospitals. In these studies the diagnosis of pulmonary embolism is generally based on physical signs and symptoms, radiological and electrocardiographic changes, and autopsy findings in available cases. In most clinical studies, the number of cases of fatal and nonfatal pulmonary embolism diagnosed on the ward is compared to the total hospital admissions. Such surveys provide significant presumptive data regarding the rela-

tive incidence of pulmonary embolism in hospital practice. Short,¹ studying pulmonary embolism in a general hospital, stressed the incidence of pulmonary embolism in medical patients, he concluded that thromboembolic disease of the lung may, in fact, be the commonest serious acute pulmonary disease in modern general hospital practice. In the study by Short the incidence of thromboembolic disease was higher than that of lobar pneumonia. The attitude of the past that pulmonary embolism is a disease limited largely to the postoperative period is deep rooted in medical thinking. This conception is wrong. Embolism in medical patients, though less dramatic than in surgical cases, is of frequent occurrence. Carlotti and co-workers² studied the incidence of fatal and nonfatal pulmonary embolism in patients treated at Massachusetts General Hospital between 1936 and 1945. The diagnosis of pulmonary embolism was made in 0.6% of patients on the medical service and 0.24% on the surgical service.

Evaluation of the incidence of pulmonary embolism by clinical means is subject to errors arising from mistakes in clinical diagnosis. The clinical delineation of pulmonary embolism by roentgenologic and other clinical methods is often inconclusive, pulmonary embolism is mimicked by coronary occlusion and pneumonia and other pulmonary disease, and is often so diagnosed. On the other hand, cases with all the clinical signs and symptoms of pulmonary embolism may, in fact, be some other disorder. Although clinical surveys of pulmonary embolism in general hospital services are not an absolute index, such studies are of considerable significance, these studies emphasize the high incidence of nonfatal pulmonary embolism. As the frequency of pulmonary embolism becomes more widely realized clinically, vigilance is increased and diagnostic error is reduced, accordingly, data from clinical studies become more meaningful.

Autopsy Series in General Hospitals—The third important means of studying pulmonary embolism is by analysis of autopsy series in general hospitals. These studies tend to be more definitive than analyses based on clinical findings. Considerable impetus has been given to the investigation of thromboembolic disease by recent advances in anticoagulant and surgical treatment. This problem has come under close scrutiny in medical as well as in surgical clinics. Many studies deal with the incidence of postoperative pulmonary embolism, the prevention of this complication is still a challenge to the surgeon. General hospital autopsy series, together with clinical studies, are of great importance in determining the relative changes in incidence of disease and in evaluating prophylactic and therapeutic measures in hospital practice.

Belt,³ in a study of 567 autopsies on adults at Toronto General Hospital, found pulmonary embolism in 56 cases, an incidence of 10%, in 37 cases the emboli were massive and accounted for death. Medical cases of pulmonary embolism predominated over surgical cases in a ratio of 40 to 16. Ochsner, DeBakey, DeCamp, and da Rocha⁴ reviewed the incidence of thromboembolism at Charity Hospital in New Orleans over a 12 year period beginning in 1937. In this large general hospital during that period 32,354 deaths occurred and 10,947 autopsies were performed. Death was attributed to pulmonary embolism in 476 cases, in 383 the diagnosis was confirmed at autopsy. These investigators pointed out that a progressive increase in venous thrombosis and its attendant sequelae occurred during this period of years. In 10,940 consecutive autopsies reviewed by Collins⁵ at Los Angeles County Hospital, the incidence of fatal pulmonary embolism was 2.07%. McCartney,⁶ studying the autopsy records of the department of pathology at the University of Minnesota in the 20 year period beginning in 1919, found that 2.67% of deaths were due to pulmonary embolism. Roe and Goldthwait⁷ studied the frequency of embolism at Massachusetts General Hospital for the five year period beginning in 1943, in 2,083 autopsies, pulmonary emboli of varying size were present in 9.75% of cases, in 4.42% embolism was extensive and accounted for death, cases with massive embolism showed a steady and appreciable increase during the period of study. DeBakey,⁸ in a recent collective study compiled from reports in the literature, found that 10,497 cases of fatal pulmonary embolism had been reported in 374,844 autopsies, an average incidence of 2.8%.

Studies based on autopsy series in general hospitals suffer from the serious distortion caused by selectivity and restriction of patients admitted. The census of general hospitals in most communities does not accurately reflect the incidence of terminal illness in the aged. The population of a general hospital is, to a large degree, made up of patients of the younger age group with acute illness. Pulmonary embolism is predominantly a disease afflicting patients in the later decades of life. Since members of the older age group often do not seek hospitalization during terminal illness, critical data dealing with this segment of fatal illness most pertinent in evaluation of pulmonary embolism are not included in the autopsy statistics registered in a general hospital.

In most communities only a fraction of the general population is studied at autopsy. Even in the hospital there is a natural tendency among physicians to secure autopsy information only in cases of special academic interest with special emphasis on fatal illness in the younger age group. Consequently, with older patients, even those who are hospitalized, often little effort is made at the time of death to obtain permission for autopsy. In the aged patient with cardiorespiratory symptoms the cause of death is often, by routine, catalogued as arteriosclerotic heart disease or bronchopneumonia. Herein lies the source of considerable error. Every death, whether of immediate singular medical interest or not, merits autopsy investigation to determine the nature of terminal illness.

To obtain consistently valid data of the incidence pattern of fatal illness in the general population, autopsies must be performed in a high percentage of the persons

1 Short, D. S. A Survey of Pulmonary Embolism in a General Hospital, *Brit. M. J.* 1: 790, 1952.

2 Carlotti, J., Hardy, I. B., Jr., Linton, R. R., and White, P. D. Pulmonary Embolism in Medical Patients, *J. A. M. A.* 134: 1447 (Aug. 23) 1947.

3 Belt, T. H. Thrombosis and Pulmonary Embolism, *Am. J. Path.* 10: 129, 1934.

4 Ochsner, A., DeBakey, M. E., DeCamp, P. T., and da Rocha, E. Thrombo-Embolic An Analysis of Cases at the Charity Hospital in New Orleans Over a 12-Year Period, *Ann. Surg.* 134: 405, 1951.

5 Collins, D. C. Pulmonary Embolism, Based on a Study of 271 Instances, *Am. J. Surg.* 33: 210, 1936.

6 McCartney, J. S. Postoperative Pulmonary Embolism. *Surgery* 17: 191, 1945.

7 Roe, B. B., and Goldthwait, J. C. Pulmonary Embolism. A Statistical Study of Postmortem Material at the Massachusetts General Hospital, *New England J. Med.* 241: 679, 1949.

who die in a given community. If admission of aged persons with terminal illness is restricted and if the autopsy percentage is low, autopsy data from a general hospital cease to reflect the incidence of fatal illness in the community.

Autopsy Series in Custodial Institutions—In contrast to the relatively low incidence of pulmonary embolism reported in general hospitals, Moran,⁹ in a five year study of deaths at Pittsburgh City Home and Hospital, observed pulmonary emboli in 23.1% of autopsies, 6.8% of deaths in this custodial institution were due to massive pulmonary embolism. Custodial institutions provide unique access to information regarding the general incidence of terminal illness. If a high autopsy percentage is available, data obtained from autopsy studies in a custodial institution tend to reflect the pattern of terminal illness in the general population more closely than statistics from a general hospital.

The present study was carried out in the large institutionalized population of Columbus State Hospital in a period extending over four years. Autopsy studies were available in a majority of deaths. Although all adult age ranges are represented in the census of the institution, and although psychiatric patients are treated here, the population is composed in large measure of older persons who, lacking family ties, require simple maintenance and custodial care. Physical illness observed clinically in this group is representative of that occurring in a cross section of the adult population in a general community of comparable size. Accordingly, autopsy studies of terminal illness in this institutional community provide a key to the incidence pattern of terminal illness in the average adult population. This study, as initiated in 1949, was formulated to define the nature and incidence of all types of fatal illness occurring in this population, however, attention became sharply focused on the problem of pulmonary embolism during the course of the investigation because of the frequent and unheralded incidence of thromboembolic lesions in the lung discovered at autopsy.

METHOD OF THIS STUDY

Facilities became available in the present study to survey the incidence of pulmonary embolism in an institutional population equivalent to a community of about 2,500 persons. This investigation was carried on in the period between Sept. 1, 1949, and Jan. 1, 1954, a period of four years and four months at Columbus State Hospital in Columbus, Ohio. In this time 881 deaths occurred. Postmortem examinations were performed in 512 cases, or 58%.

The ages at death in the cases in which autopsy was performed ranged from 22 to 94 years, most deaths, as in any community, were in adults of advanced years. The number of deaths in each age group is shown in table 1, for comparison, the number of deaths that occurred in each adult age group in the surrounding city of Columbus during 1951 is noted. The distribution by ages in the two populations compared here is parallel. The age group between 60 and 69 years makes up 22.7% of deaths in Columbus and 24.7% of cases in the autopsy series. In 46.4% of deaths in the city the age was 70 years or over, similarly 48% of the deaths in the autopsy series oc-

curred in persons of 70 years or over. The autopsy series thus reflects closely the age distribution of adult deaths occurring in the general population in this region.

The plan of investigation as initiated in 1949 represented a concerted effort to define more exactly the nature of terminal illness in this institutional community. In carrying out this investigative program two principles were emphasized: first, to obtain a valid cross section of fatal illness occurring in the population, efforts were made to obtain autopsy permission in each death regardless of the apparent medical importance of the case, second, the postmortem routine was standardized. In a study such as this, autopsy must be done not only in a high percentage of cases but in a carefully regulated and vigilant manner. Technical procedure at autopsy must be carefully controlled in studying the pathology of thromboembolic disease and in evaluating its incidence. The postmortem examination should be done soon after death, with passage of time, tissue enzymes are liberated, and adherent thrombi or emboli may become loosened by local autolytic action.

TABLE 1—Age Groups in Present Autopsy Series and in Adults Who Died in Columbus, Ohio in 1951

Age Yr	Autopsy Series		Columbus, Ohio 1951	
	Deaths		Deaths	
	No	%	No	%
20-29	13	2.5	86	2.3
30-39	16	3.1	133	3.6
40-49	45	8.8	313	8.6
50-59	66	12.9	601	16.4
60-69	126	24.7	629	22.7
70 and over	246	48.0	1,672	46.4
Total	512		3,658	

It is requisite that autopsy be performed on unembalmed bodies. Arterial irrigation considerably complicates the problem of analyzing blood clots. The stream of embalming fluid, introduced under pressure, may bring about artefactual dislodgment or impaction of intravascular clots. The embalming solution converts a simple postmortem clot to a mottled gray-red friable mass resembling an embolus, a recent embolus may be so altered that its true nature at autopsy remains a matter of doubt. In the present study effort was made to perform autopsies as soon as possible after death, day or night, on unembalmed bodies, during the period of this study 95% of autopsies were performed on unembalmed bodies. In 65% of cases the autopsy was done within five hours after death. In this study 88% of the autopsies were performed by me, the remainder by other pathologists, in both groups of cases the incidence of thromboembolic lesions observed was similar, accordingly it is felt that variations in autopsy technique and observation were held to a minimum.

In evaluating the findings in this study, note was made of the patient's mental status prior to death. Although a majority of the population in the institution required only simple maintenance, a review of the clinical records revealed that there was in 30% of cases a degree of active mental disturbance seemingly out of proportion to the

8 DeBakey, M. E. A Critical Evaluation of the Problem of Thromboembolism. Surg., Gynec. & Obs. 98:1, 1954.

9 Moran, T. J. Pulmonary Embolism in Non-Fatal Patients with Preexisting Thrombosis. Am. J. Clin. Path. 17: 205, 1957.

natural infirmities of age. These cases, evenly distributed through groups with and without pulmonary embolism, did not appear to alter the general significance of the study.

In the course of the investigation the autopsy percentage in the institution rose. During the last four months of 1949, 49% of persons who died were examined at autopsy, in 1950, 54%, and in 1951, 67%. The autopsies represented by this increase were largely in those cases that are diagnosed at the bedside as terminal bronchopneumonia or arteriosclerotic heart disease, cases that are sometimes called "cronics" or less flattering names. As the number of autopsy permissions in these cases increased in proportion, an unanticipated change in the incidence pattern of fatal illness as observed in the autopsy room became evident. Pulmonary embolism, though a common finding at autopsy in other years, showed a striking increase. This sharp rise in incidence of thromboembolic disease coincided with the period in

cases the presence of a characteristic, coiled, friable, laminated embolus presented no problem in autopsy diagnosis. Occlusion was classified as medium if the largest artery occluded was 5 to 10 mm in diameter, these are arteries that are located mainly in the intermediate third of the lung field. Involved arteries of less than 5 mm in diameter, such as those located in the peripheral zone of the lung, were classified as small artery occlusion.

RESULTS

The original investigation had not been designed specifically as a study of thromboembolic disease, however, the high incidence of pulmonary embolism discovered at this time proved to be a most significant aspect of the data. In the first year 29% of the 90 cases at autopsy revealed thromboembolic lesions of some degree in the lung. The incidence of thromboembolic disease in the lung for the entire period of study is indicated in table 2. Of the 512 cases studied at autopsy, thromboembolic lesions were present in 132, or 25.7%. In this series massive pulmonary embolism was the cause of death in 73 cases, or 14.2%. Occlusion occurred in arteries of medium caliber in 18, or 3.5% of cases. Arterial occlusion limited to the small branches in the periphery of the lung occurred in 41, or 8% of autopsies.

Well-established infarcts of the lung were noted in 60 autopsies, representing 45% of the cases in which there was embolic disease of the lung. In many instances, as will be noted later, rapid death did not permit development of definite infarction. As is well known, occlusion of an artery may not lead to infarction even after a prolonged period. Infarction in the lung is not likely to occur after impaction of the embolus unless there is antecedent embarrassment of the pulmonary circulation, as in chronic passive congestion, or unless there is coexistent parenchymal disease such as pneumonia or bronchiectasis.

The most frequent site of embolization in the lung was the right lower lobe, this lobe was involved in 61% of the cases in which there were thromboembolic lesions, usually there were concurrent emboli in other lobes. In 38% the left lower lobe arteries contained emboli, other lobes had a smaller number of emboli. The distribution of emboli noted here may be due to the anatomic structure of the pulmonary arterial tree. The artery to the right lower lobe lies in a more direct line with the current from the main pulmonary artery than do the slightly angulated branches to the other lobes, consequently, more emboli may be directed to the right lower lobe than to other sites.

The occurrence of pulmonary embolism in the present study is greater than that generally reported, the incidence recorded in most previous studies is derived from a distinctly selected population. Whereas the present survey is based on terminal illness occurring in a wide cross section of adults in an institutional community, most other reports are derived from studies of deaths occurring in the more highly restricted population of general hospitals. The findings in the present study agree closely with those of Moran,⁹ who studied the general incidence of pulmonary embolism in a population similar to that of the present study. In Moran's study of 635 con-

TABLE 2—Incidence of Thromboembolic Disease of the Lung in 512 Autopsies

Age Yr	Total No. of Autopsies	Thromboembolic Lesions			Total with Thromboembolic Disease	
		Massive Pul- monary Embolism	Medium Artery Occlu- sion	Small Artery Occlu- sion	No.	%
20-29	13	0	0	1	1	7.7
30-39	16	1	0	0	1	16.6
40-49	41	6	1	2	9	20.0
50-59	66	4	0	8	12	18.2
60-69	126	16	7	5	27	21.8
70-79	172	28	7	16	51	29.7
80-89	69	11	3	8	28	40.7
90-99	5	3	0	1	4	80.0
Total	512	73	18	41	132	25.7

which the autopsy percentage rose and occurred after the practice of embalming bodies before autopsy was discontinued.

When pulmonary arteries were occluded by adherent clot, it is likely that in some instances the process began as an embolus and grew by appositional thrombosis and that in some instances the occlusion originated in situ as a thrombus. The resulting closure of the pulmonary artery, the effect pertinent to the present study, whether embolic or thrombotic, would be largely the same, an ischemia of the lung tissue. In analyzing an antemortem clot in a pulmonary artery it is often difficult to distinguish between embolus and thrombus. Ceelen,¹⁰ in reviewing this problem, found that most researchers, including Virchow, held that most antemortem clots in the branches of the pulmonary arteries are embolic. Consistent with this, in the present report such lesions will generally be referred to as embolic.

In analyzing the emboli in the pulmonary arteries, three groups of cases, based on the extent of vascular occlusion, could be defined. Arterial occlusion was classified as massive, medium, and small, according to the size of the occluded artery. Massive embolism was the diagnosis applied at autopsy if one or more of the main lobar arteries was occluded by an antemortem clot. Usually in these

¹⁰ Ceelen, W. Embolische Verschleppungen in die Lungenschlagader, in Henke, F., and Lubarsch, O. Handbuch der Speziellen Pathologischen Anatomie und Histologie, Berlin, Springer Verlag, 1931, vol. 3, pt. 3, p. 59.

secutive autopsies, emboli were observed in 147 cases, an incidence of 23 1%, in 43 instances, embolism of massive degree occurred

The present study indicates that in the adult population pulmonary embolism increases sharply with age. The number of cases in which autopsy was performed and the incidence of pulmonary thromboembolic lesions as related to age groups is recorded in table 2. Two hundred forty-six deaths occurred in persons more than 70 years old, 83 of these cases, or 34%, showed thromboembolic lesions in the lung at autopsy. Massive pulmonary embolism was the direct cause of death in 46, or about one-fifth, of the persons in this portion of the population who came to autopsy.

CLINICAL PATTERNS OF PULMONARY EMBOLISM

In considering this series of cases from a clinical point of view, it became evident that three definite clinical patterns can be associated with the process of pulmonary

de Takats and Jesser¹¹ have emphasized that patients may die from a small embolus obstructing an insignificant area of the lung, it is felt that a widespread radiation of autonomic reflexes occurs during pulmonary embolism and that this may contribute to the cause of death. It is well known that in the leg, embolic occlusion of a relatively small artery may cause rapid blanching of the entire limb, massive spasm, initiated at the site of the impacted embolus, sweeps up and down the arterial tree, and the entire extremity is rendered anoxic. Similarly, the impaction of an embolus, large or small, in a pulmonary artery may evoke spasm through the entire pulmonary arterial tree. This spasm, if severe, would account for sudden anoxic death.

The subacute clinical pattern of pulmonary embolism was observed in 55 cases, thus represents 42% of deaths associated with pulmonary embolism and 11% of deaths occurring in all cases in which autopsy was performed in this study. In this group the period of terminal illness

TABLE 3—Clinical Patterns in 132 Patients with Thromboembolic Pulmonary Lesions Who Came to Autopsy

Clinical Type	No. of Cases	Length of Terminal Illness	Autopsy Findings *	Clinical Diagnosis *
Sudden death	24	Instant to several hours	Massive embolism in one or more lobar arteries	Coronary occlusion
Subacute course	55	1 to 7 days	Occlusion of large and medium sized pulmonary arteries; early infarcts	Bronchopneumonia
Chronic pattern	53	Several weeks	Often only small arteries occluded; often arteries of all calibers occluded; infarcts of varying age	Often no pulmonary diagnosis made

* In most cases

TABLE 4—Effect of Age, Sex, Race, and Body Weight on Incidence of Thromboembolic Disease of the Lung in 512 Autopsies

Autopsies	No	Average Age Yr			Sex				Color				Average Body Weight Lb
		Males	Females	All Patients	Males		Females		White		Negro		
					No	%	No	%	No	%	No	%	
All cases	512	63.7	63.9	63.6	295	57.6	217	42.4	461	90.0	51	10.0	132
With thromboembolic lesions	132	70.3	70.6	70.5	69	52.0	73	53.6	117	88.5	15	12.5	125
Without thromboembolic lesions	380	64.2	63.5	64.0	226	59.0	144	37.4	344	74.5	36	70.6	133

embolism—sudden death, a subacute course, and a chronic pattern. These three clinical forms are detailed in table 3. The clinical effects evoked by thromboembolic disease of the lung may be varied and confusing. Although the division of cases presented here is empirical and there is necessarily an overlapping of one group with another, this classification permits a panoramic view of the clinical guises of pulmonary embolism observed in this study.

Sudden death occurred in 24, or 18%, of the patients in this study who had thromboembolic lesions in the lung. Clinically, these cases demonstrated the textbook picture of sudden, unexpected death, however, at the bedside these were often diagnosed as coronary occlusion. Autopsy showed that 18 of this group had large, coiled, loosely impacted emboli in one or more of the lobar arteries.

In six instances of sudden death, emboli in medium-sized pulmonary arteries constituted the principal finding at autopsy. The clinical and experimental studies of

usually extended over a period varying from several days to a few weeks. This protracted terminal illness, accompanied by increasing respiratory symptoms, was usually interpreted at the bedside as bronchopneumonia. The cause of death as defined at autopsy usually came as a surprise to the clinician. This "quiet" form of pulmonary embolism is not widely realized in general practice. In 32 cases in which there was a subacute course clinically, massive adherent emboli, often associated with lung infarcts, were found at autopsy. These cases were particularly interesting clinically because of the deeply rooted textbook conception that massive pulmonary embolism usually causes sudden death, the present study indicates on the contrary, that with massive embolism a terminal illness prolonged over several days is commoner than sudden death.

Chronic terminal illness was present clinically in 53 or 40%, of the patients with thromboembolic lesions in the lung. Well-attached emboli associated with lung infarcts of varying age were usually observed at autopsy. These findings indicated that the embolic process in these cases was chronic and recurrent and did not represent

merely an agonal complication. In many instances only small-caliber arteries were occluded, however, in 22 cases in this group there was massive pulmonary artery occlusion, these were mainly cases of ununited fracture of the femur in severely debilitated patients with large decubital ulcers. Femoral vein thrombi were usually evident.

Clinically, in patients with chronic syndrome of pulmonary embolism, death was generally associated with no sudden terminal change, in most instances the patients died quietly, often respiratory symptoms were remarkably minimal, pulmonary findings clinically being overshadowed by other major pathological processes such as renal or malignant disease.

FACTORS CONTRIBUTING TO PULMONARY EMBOLISM

Age and Sex—As noted previously in table 2, the incidence of pulmonary embolism in the adult population increases with age. These findings coincide with the reports by Carloti,⁶ Roe and Goldthwait,⁷ and others. The present study stresses particularly the great frequency of thromboembolic disease in the seventh and eighth decades, in the extremely aged, pulmonary embolism may, in fact, be the commonest direct cause of death. In the present study the cases of pulmonary embolism occurring in the later decades account for a much larger proportion of the total incidence than is evident in reports in the older literature. This difference may be related, in part, to the consistent rise in average longevity that has occurred in the general population. Since pulmonary embolism is largely a disease of old age and since the older age group makes up an increasingly larger proportion of the total population, a gradual rise in the total incidence of pulmonary embolism in a given community may be expected in the future.

Sex difference influenced the incidence of pulmonary embolism almost as much as the factor of aging. The occurrence of thromboembolic disease was significantly greater in women than in men. As indicated in table 4, 33.6% of women and 20% of men showed thromboembolic lesions. This incidence is in agreement with the findings of Morgan,⁸ who, in a similar study, reported pulmonary embolism in 30.8% of women and 20.5% of men. The reason for the difference in incidence in the sexes is not readily evident. Phlebothrombosis, according to Hunter and his associates,¹² occurs with almost the same frequency in men and women. In the present series the average age at death in both sexes was practically the same. The resolution of this problem, the cause of the difference in incidence of thrombotic disease in the two sexes, merits further investigation.

Besides age and sex differences, other factors relating to the cause of pulmonary embolism were explored during the course of this investigation. It is evident that many bodily mechanisms influence the onset, course, and final effect of thromboembolic disease in the lung. Three phases in the process present themselves for consideration: formation of the thrombus, detachment of the thrombus, and impaction of the embolic mass.

Formation of Thrombus—A preexisting thrombus in a systemic vein is the prime cause of embolic disease of the lung. Parenthetically, it can be stated that the prevention of pulmonary embolism lies in the prevention of thrombosis of peripheral systemic veins. The building up of a thrombus is related to alterations in the clotting mechanism of the blood, slowing of the blood flow, and local changes that may be present in the lining of blood vessels. It was not within the scope of this study to investigate the clotting mechanism of blood in the cases studied. Whether the chemical coagulability of the blood increases with age is not well defined, this should be further investigated. The older age group is, however, subject to many minor intercurrent illnesses that are known to increase coagulability of blood, this circumstance may play an important role in effecting a higher incidence of thrombosis and embolism in the older age group.

Detachment of Thrombus—Early in this study attention was sharply directed to one clinical factor that strongly influenced the occurrence of pulmonary embolism. In many cases in older persons in relatively good health sudden massive embolism developed after a period of bed rest for a minor illness such as an upper respiratory infection, such patients were stricken fatally when ambulation was resumed. It is likely that stasis of the venous blood flow associated with enforced bed rest sets the stage for thrombosis, with the return to ambulation, detachment of loose, newly formed thrombi in the lower extremities results in fatal embolism. In some instances embolism occurred entirely without prodromes, sometimes during sleep, in persons previously apparently well.

Many cases of thromboembolic disease were initiated by inflammatory processes in the tissues of the lower extremities. Decubital ulcers often gave rise to thrombosis in extremity veins. In 19 cases, recent fracture of the femur led to femoral vein thrombosis and pulmonary embolism. Considering the entire series of cases with pulmonary embolism, relatively few showed clinical signs of venous thrombosis prior to death, femoral phlebotrombi, though present, were often silent before embolization. In 32 of the 132 cases of thromboembolic disease of the lung in this study, thrombi were visible in the proximal segment of the femoral vein at autopsy or could be expressed from the vein by "milking" the extremity. It is likely that a considerably larger number of thrombi were present, since dissection of the limbs was usually restricted in the autopsy permission, confirmation of suspected deep venous thrombosis often was not available. Hunter and associates¹² studied phlebotrombosis in the lower extremities in 351 unselected autopsies. Thrombi were found in the deep veins of the leg in 52.7% of middle-aged and older persons who had to remain in bed for varying periods. Ceelen¹⁰ has stressed the frequency of pulmonary embolism in the presence of venous thrombosis. "In very careful dissections of the arteries of the lungs, in cases where there are thromboses in other parts of the body, there will be found emboli in the lungs in 75% of cases."

¹² Hunter, W. C., Sneed, V. D., Robertson, T. D., and Snyder, G. A. C. Thrombosis of the Deep Veins of the Leg. *Arch. Int. Med.* 68:1 (July) 1941.

Impaction of Embolic Mass—Impaction of the embolus is the event responsible for the initiation of the immediate clinical effects of the thromboembolic process. Correlation of the clinical course with the autopsy findings indicated that there is a wide variation in the effect produced by the impaction of an embolus in a pulmonary artery. As noted previously, often a relatively small embolus precipitated death. On the other hand, occlusion of a large portion of the pulmonary vascular bed was in some instances tolerated for long periods. There was often no reasonable explanation for this wide variation in clinical effect. It was noted, however, that if the functional reserve of the lungs or the heart had been reduced by antecedent disease and if congestive failure or other cardiorespiratory embarrassment was already present, the effect of pulmonary embolism tended to be intensified.

Other Factors—Various other constitutional and environmental factors were considered in studying the occurrence of pulmonary embolism. In reference to race, 90% of the patients studied in this series were white and 10% were Negro. The incidence of pulmonary thromboembolic lesions in white patients as noted in table 4 was 25.5%, the incidence in Negro patients was only slightly greater, 29.4%.

Cardiac disease has been cited¹³ as an important antecedent in thromboembolic disease. The circulatory stasis associated with congestive heart failure tends to favor the formation of extremity venous thrombi. Congestive heart failure of varying degree is common in patients of the older age group, in the present study it appeared evenly distributed in cases with and without pulmonary embolism. As noted previously, pulmonary embolism in patients with antecedent heart disease was less well tolerated than in other patients. Pulmonary embolism occurred slightly more frequently in patients with hypertension than in persons with normal blood pressure.

Obesity has been pointed out as a constitutional factor contributing to the development of thromboembolic disease, particularly during the postoperative state.¹⁴ In the cross section of population in the present study neither the postoperative state nor obesity played an important role in influencing thromboembolic disease. Postoperative deaths were relatively few in the series studied. The average body weight for all persons who came to autopsy was 132 lb (59.9 kg), for the group with pulmonary embolism, 128 lb (58.1 kg). Only 3% of the persons, both with and without pulmonary embolism, were over 200 lb (90.7 kg) in weight.

Malignant tumors are sometimes considered to be a direct factor in causing thromboembolic disease. In this series of 512 autopsies there were 70 cases of malignant tumors, in 28 of these cases the disease was far advanced and there was extensive invasive growth and metastasis at the time of death. Pulmonary embolism was present in 33.3% of cases in which there were far-advanced malignant growths. Arterial occlusions in most instances occurred in vessels of small caliber. The number of neoplasms in the present study constitutes a small group, however the results indicate that, although the incidence

of pulmonary embolism in patients with malignant disease is high, it is not significantly greater than that of the older age group in general. Most malignant disease, like most pulmonary embolism, occurs in the older age group. The high incidence of thromboembolic disease reported in patients with malignant disease may indicate merely that embolism is common in the cancer age, not that it is actually related to the presence of cancer.

Climatic and seasonal changes have been suggested as being of some importance in influencing the incidence of pulmonary embolism. In Columbus, Ohio, the site of the present study, the weather changes occurring during the cycle of the seasons are moderate but distinct. The incidence of pulmonary embolism was not significantly influenced by seasonal changes. Most investigators who have studied the problem have observed a uniform occurrence of pulmonary embolism through the seasons of the year.¹⁵ In the summer months thromboembolic lesions were found in 26% of patients who died and who came to autopsy, in autumn in 29%, in winter in 26%, and in spring in 31%.

SUMMARY AND CONCLUSIONS

Pulmonary embolism is of far wider occurrence than is generally realized, in the present study, it was one of the commonest direct causes of death in the aged. Its incidence will probably increase, since it is primarily a disease of old age, since the older age group is growing, and since many types of bacterial terminal illness are being controlled. In this study, three clinical patterns could be distinguished in cases of pulmonary embolism: sudden death, usually diagnosed as coronary occlusion, involving the major branches of the pulmonary arterial tree, a subacute form that usually resembled terminal bronchopneumonia, in which the large and medium-sized pulmonary arteries were affected, and the chronic clinical form usually incident to prolonged terminal illness, in which frequently only the small arteries were occluded. All three forms of the disease had frequently been wrongly diagnosed during life. Three factors strongly influence the occurrence of pulmonary embolism: age, sex, and periods of enforced bed rest. The greater frequency of incidence in women than in men is unexplained and should be the subject of further study.

The results of this study tend to dispel two textbook suppositions that are deeply rooted in medical thinking: first, that pulmonary embolism is mainly a postoperative complication, and, second, that it is characteristically a sudden and rapid form of death. The vast majority of cases occurred in medical patients, and only a small percentage of patients died suddenly. As the wide variation in its clinical picture becomes better recognized, and as the criteria for its diagnosis becomes clarified, pulmonary embolism will be correctly diagnosed more often, and more extensive prophylactic and therapeutic measures will be pursued.

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ANESTHESIA THEN AND NOW—1914 TO 1954

CHAIRMAN'S ADDRESS

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I shall limit my remarks to the subject of anesthesia as a specialty and its place in American medicine. The period I am going to cover extends from 1914 to 1954 and represents exactly 40 years of medical practice largely devoted to anesthesia. Back in 1914, the medical graduate did not have as much of a problem as to the type of practice he would engage in as the graduate of today. Specialization then was an exception. The main concern of the graduate was a good internship, which meant a choice of either a surgical or a medical appointment with allied specialties thrown in, anesthesia was not among those specialties. As a matter of fact, the medical schools did not even have it in the curriculum. No reference to it was made at any of the lectures or demonstrations. The student witnessing an operation was mainly impressed by the performance of the surgeon. It did not occur to him that the patient had to be anesthetized before any surgery could be done.

The medical profession at that time did not consider anesthesia important enough to be solely in physicians' hands. Anyone under supervision of a surgeon could administer anesthesia, and by default it was largely taken over by nonmedical technicians. Hospitals, having to provide anesthesia, either employed nonmedical personnel or had a physician-anesthetist appointed to supervise anesthesia. These physicians did not have to qualify for this position and usually dropped anesthesia as soon as appointed to the regular surgical staff. Incidentally, I accepted such a position soon after completing my internship, and must confess that I too intended to use it as a steppingstone to a surgical appointment. However, impressed with the importance of anesthesia, I decided to continue as anesthetist to the hospital even after receiving a surgical appointment and served in a dual capacity for several years. In 1927 I was elected a fellow of the American College of Surgeons. Shortly thereafter, feeling that I could contribute more to the welfare of patients by devoting full time to the practice of anesthesia, I did so. It is not surprising that in view of the status of anesthesia, as described, few physicians were willing to make it their career. Yet, a number of men with strong conviction that anesthesia was a vital part of medical practice specialized in it and did all they could to teach it and improve it.

DEVELOPMENT

The first anesthesia society in the United States was formed in New York City in 1905 as the Long Island Society of Anesthetists. The group consisted of nine men, and these pioneers, together with a few other scattered throughout the country, formed a nucleus for what was to become the American Society of Anesthesiologists, almost 4,500 strong today. Those few men who did so much for so many anesthesiologists deserve everlasting

gratitude. By 1912 the founders' group reached 50 and became the New York Society of Anesthetists. The progress of this society was rather slow, and by 1935 there were just several hundred members, but as these men were located all over the United States, it then became the American Society of Anesthetists, which was incorporated in 1936. The name was again changed to the American Society of Anesthesiologists in 1945. The society has devoted itself ever since its organization to the promotion and support of scientific progress of this specialty, and made an early attempt to certify its own members as fellows. Eventually, in 1946, the American College of Anesthesiologists was established, and from then on it has conferred fellowships on the members of the society. In 1937, after much preliminary spadework, the Advisory Board for Medical Specialists was convinced that anesthesia rated a board of its own. A board subsidiary to the Board of Surgery functioned for two years, and finally, in 1939, an independent American Board of Anesthesiology was organized and incorporated.

In 1941, the House of Delegates of the American Medical Association approved the Section on Anesthesia. The same year, it also passed a resolution affirming that anesthesia is the practice of medicine and should be considered as a medical and not a hospital service. This resolution assumed a great importance, because, with the advent of the prepaid hospital and medical insurance, it became necessary to distinguish between hospital services on one hand, and medical services on the other. The Blue Cross consistently maintained, and continues to maintain, that even though anesthesia is practice of medicine, it should, nevertheless, be included in hospital services. This has caused constant misunderstanding and irritation between patients, hospitals, and anesthesiologists.

THE PRESENT PICTURE

Forty years ago anesthesia did not exist as a specialty. It was not taught in medical schools. It was not recognized by organized medicine, and, with few exceptions, it was in the hands of nonmedical personnel. Today, most medical students receive some didactic and clinical instruction in anesthesia. Many schools have professors of anesthesia, heading a separate department. Every graduating class today has several physicians who expect to specialize in anesthesia and are seeking residencies that are approved by the American Board of Anesthesiology and the A. M. A.

As previously stated, the A. M. A. is now on record that anesthesia is a recognized specialty and that it is a medical and not a hospital service. The public in general is becoming more and more aware of the importance of anesthesia and of the physician-patient relationship with anesthesiologists. Most surgeons today are willing and happy to let the anesthesiologists handle anesthesia problems. Only a few die-hards still insist that a surgeon alone

is responsible for the conduct of the case and, therefore, should be making decisions regarding anesthesia too. I believe that the supply of anesthesiologists cannot today adequately meet the demand. This leads to the consideration of the future of the specialty and what can be done about it.

FUTURE OF ANESTHESIOLOGY

If I may be permitted to speculate a bit, I would like to make several predictions. First, anesthesia has been definitely established as a medical specialty, and it is bound to progress with the rest of medicine. I believe that whatever is in store for all of medicine is also in store for anesthesiology. It makes it imperative, therefore, that anesthesiologists go along with their medical colleagues, do all they can to preserve private practice of medicine, and follow the code of ethics of the A. M. A. and the American Society of Anesthesiologists. Second, there are some well-meaning people in this country who claim that not enough physicians are being graduated from our medical schools to properly take care of our population and that the medical profession is actually creating a monopoly. The A. M. A. denies these allegations and insists that the country does have enough physicians and that the fault is mainly in distribution. I am not going to go into the merits of this question, but I think that anesthesiology is short of trained physicians. There

are about 10,000 hospitals in the United States, and if one qualified anesthesiologist were put in each one of them at least 10,000 would be needed, and of course, many hospitals need more than one. It is my opinion, and hope, that more graduates of medicine will enter anesthesia, and that some day the supply will meet the demand. Of course, this will require constant and diligent attention, collectively and individually.

The American Society of Anesthesiologists is doing an excellent job in public relations, but it is incumbent on every anesthesiologist to do his part to educate the public and to interest the medical graduate in anesthesia. Those who are professors of anesthesiology in medical schools could, I believe, do a real job in this respect. Third, hospital and medical insurance today is playing a very important role in practice of medicine in general as well as in anesthesia. I believe that here too, with proper approach, anesthesiologists will some day be in a position to negotiate with these insurance companies to the advantage of everyone. In conclusion, I think I am justified to say that anesthesiology has an important role in the practice of medicine, and that, with proper cooperation of all agencies concerned with the treatment of the sick, physicians can achieve their goal—better medicine and best medical care for the people.

1749 Grand Concourse

ANORECTOCOLONIC SIDE-EFFECTS OF ANTIBIOTIC THERAPY

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The occurrence of toxic side-effects following the administration of antibiotics is by now well understood by the medical profession. Some authors believe that the intestinal side-effects may be brought about by the destruction of some of the important enteric organisms, namely, *Escherichia coli*, that in turn ordinarily suppress intestinal micrococci (staphylococci) and fungi. The administration of an antibiotic with a spectrum affecting *Esch. coli* may produce a suppression or destruction of the propagation of that organism and give antibiotic-resistant micrococci, *Candida* (Monilia), especially *Candida albicans*, or other yeast or yeast-like organisms a chance to replace the normal bacterial flora in the intestinal tract. However, it should be remembered that superinfection with antibiotic-resistant micro-organisms, including both fungi and bacteria, is a complex phenomenon and that most cases of localized moniliasis are not actually instances of this disease.¹ Fairlie and Kendall² stated that the concept that enteritis caused by the parenteral usage of penicillin and dihydrostreptomycin "is due to suppression of normal intestinal flora, permitting overgrowth of intestinal staphylococci appears to be oversimplified." These authors believe that "A direct stimulation of the *Staphylococcus* by antibiotics must be considered." Sublethal dosages of drugs, according to an established pharmacological law, are known to be capable of acting as stimulants. In general, the exact relation-

ship of fungal or yeast-like infections accompanying or following treatment with antibiotic agents is far from clear. The precise role of the local irritating effect (Bryer) of the antibiotics and the interference with vitamin formation by enteric organisms on the initiation of adverse side-effects still remains to be assessed. As far as the anorectocolonic symptoms are concerned, our observations³ concur with those of Pappenfort and Schnall,⁴ that pre-existing skin or mucosal lesions "probably are important predisposing factors." It is known that practically all antibiotics including the newest ones, namely, erythromycin and carbomycin (Magnamycin), cause gastrointestinal side-effects. The incidence of these side-effects has been estimated at 20% in patients taking the recommended dosage of the antibiotic⁵, the individual reaction among these patients varies enormously. The important anorectocolonic side-effects are diarrhea and anal pruritus, with or without associated burning and perianal skin mani-

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5. Jackson, G. G., and Dowling, H. F. Adverse Effects of Antibiotic Treatment. *GP* 3: (Aug.) 1963.

festations.⁶ As far as the anorectal syndrome is concerned, there appears to be nothing so distinct or pathognomonic about this condition to justify the designation of a "distinctive clinical entity,"⁷ except for the lack of diurnal-nocturnal variation of pruritus. These patients usually have no nocturnal itching, so their sleep is undisturbed.

METHOD AND MATERIAL

One hundred thirty-six patients with the anorecto-colonic syndrome seen in private and clinic practice were studied, treated, and followed. In 125, this syndrome followed the oral administration of a broad spectrum antibiotic drug, while in 11 persons erythromycin was the causative agent. Diarrhea as a sole complication usually appeared within 12 to 72 hours after the ingestion of variable amounts (sometimes two or three doses) of the antibiotic and was noted in 37 patients, diarrhea in association with anal or anogenital pruritus was noted in 22 additional persons. The itching appeared either at the same time or, more commonly, several days after the onset of the diarrhea. Pruritus alone was noted in 51 patients, while pruritus associated with anal or anogenital soreness and burning was observed in 26 additional patients.

Under the term of diarrhea are included (1) 29 patients who had approximately 4 to 5 loose stools per day without gross or microscopic blood or pus, (2) 27 patients who had only 1 to 2 daily bowel movements of loose stool without gross or microscopic blood or pus, and (3) 3 patients with dysentery of moderate severity—7 to 10 liquid stools daily with blood and pus. The diarrhea in the last three patients developed within three to eight days after the ingestion of chlortetracycline (Aureomycin) in two and of oxytetracycline (Terramycin) in one. These drugs had been given in dosages of 250 mg every six hours. All three patients had in the past received penicillin (and perhaps also other antibiotics) without reaction. Endoscopy for a distance of about 10 cm from the anal verge revealed a uniformly reddened, injected, edematous mucosa with tiny scattered superficial ulcerations. The mucosa was friable and bled on slight trauma, this resembled the endoscopic picture of nonspecific ulcerative colitis. Gram stains of mucosal smears revealed micrococci, their exact genus was not identified.

Routine sigmoidoscopic examinations of the remaining 56 patients with diarrhea showed a mild injection of the mucosa of the ampulla in 19 patients, mild cryptitis and papillitis in 7, and mild to moderate excoriation of the perianal skin and normal appearing intestinal mucosa in 21. Associated antecedent lesions in 38 patients included tabs and/or redundant perianal skin, moderate

to large mixed piles, and hypertrophied papillae or fibroepithelial polyps. Very important incidental findings were polypoid adenocarcinomas of the rectosigmoid in two patients and a sessile benign adenoma in a third.⁸ Unlike sigmoidoscopy, radiography of the colon with the aid of a double contrast medium was not performed routinely, this examination was carried out in about 15 instances and was reported to be normal, except for varying degrees of spasm. The antibiotics that had been administered to these persons were chlortetracycline in 33 patients, oxytetracycline in 20, and erythromycin in 6.

Anal pruritus (without diarrhea) occurred and was studied in 77 patients. The pruritus usually appeared within several days after ingestion of the antibiotic, but in some instances pruritus appeared weeks later. The causal relationship was sometimes established on the basis of the absence of diurnal-nocturnal variation. The involved skin was practically normal, except for scratch marks, in 51 patients of whom 27 were women, in the remaining 26 persons, 13 of whom were women, the pruritus was associated with a mild to moderate moist dermatitis accompanied by superficial excoriations and multiple fissures. Antecedent anorectal lesions, similar to those described for diarrhea, were found in 42 patients. Also of significance was the incidental finding in three patients of adenomas of the rectum, one of which was the seat of an early noninvasive malignant lesion.⁸ This again points up the necessity for a complete proctologic survey, including sigmoidoscopy, and roentgenography when indicated. The gynecologic examinations were essentially normal, except for mild to moderate excoriation of the vulva in 13 women. In 17 cases of anogenital pruritus, the vulval itching was considerably more severe than the anal pruritus.

The causative antibiotics that had been administered in this group of patients were chlortetracycline in 45, oxytetracycline in 25, erythromycin in 5, and tetracycline (Achromycin) in 2.

Interrogation disclosed that over 40% of all 136 patients had had antecedent multiple complaints such as vague abdominal pain, fatigue, passage of mucus from the rectum, insomnia, nervousness, and others. As a group they appeared to be unstable, hypochondriacal, and "suggestible"⁹ and exhibited a great deal of self-pity. Most of these persons were engaged in intellectual pursuits, a few were clear-cut neurotics who utilized their complaints for psychological needs. A small number of these patients, having read an item in the newspaper concerning the "reckless use" of the antibiotics,⁹ blamed their physicians for having prescribed the drugs for "trivial trouble" that had caused their present "new" but avoidable disease. Certainly, we are in favor of informing the public, but such information should be complete, and, in this case, it should have made clear that reactions might be inevitable.

CLINICAL RESULTS

Diarrhea—The three cases of dysentery that showed micrococci on smear responded promptly after discontinuation of the use of the causative antibiotic and the administration of large doses of carbomycin or erythromycin.¹⁰ combined with bed rest and the administration of fluids and electrolytes. It is important (1) to recognize

6 (a) Harris, H. J. Aureomycin and Chloramphenicol in Brucellosis with Special Reference to Side-Effects, *J A M A* 142: 161 (Jan 21) 1950. (b) Tomaszewski, T. Side Effects of Chloramphenicol and Aureomycin, with Special Reference to Oral Lesions, *Brit M J* 1: 388 (Feb 24) 1951. (c) Willcox, R. R. Anorectal Syndrome and Other Mild Side-Effects of Terramycin, *Lancet* 2: 154 (July 28) 1951.

7 Manheim, S. D., and Alexander, R. M. Further Observations on Anorectal Complications Following Aureomycin, Terramycin, and Chloromycetin Therapy, *New York J Med* 54: 231 (Jan 15) 1954.

8 Turell, R., Krakauer, J. S., and Maynard, A. de L. Colonic and Rectal Function and Disease, *Surg, Gynec & Obst* 96: 313 (April) 1953.

9 Antibiotic Warning, *New York Times*, Jan 6, 1952.

10 Dearing, W. H., and Hellman, F. R. Micrococcic (Staphylococcic) Enteritis as a Complication of Antibiotic Therapy: Its Response to Erythromycin. *Proc Staff Meet, Mayo Clin* 28: 121 (March 11) 1953.

this complication and to identify the causative organism promptly, (2) to employ an antibiotic to which the causative organism is susceptible, and (3) to supply (or replace) the lost electrolytic elements and fluid. In our experience, the therapeutic problem is not the same as that encountered in nonspecific ulcerative colitis. This or a similar therapeutic regimen has been successful in many of the seriously ill, hospitalized patients suffering from either ulcerative or membranous micrococcic enteritis.^{10a} One word of caution should be given. Some organisms have already developed a resistance to the recently introduced erythromycin. This is evidenced by the experience reported here and by the occurrence of acute dysentery following the oral administration of this antibiotic. The development of new antibiotics to which the present resistant bacteria are susceptible becomes increasingly important.

Most of the other cases of diarrhea responded to simple medication along with the discontinuation of the offending antibiotics. The addition of carbomycin or erythromycin was of apparent benefit in nine patients. Reassurance of the patients seemed of very significant value, as many of these patients were highly suggestible.^{6c} As a sole form of treatment, camphorated tincture of opium (paregoric), in doses as small as 4 cc given twice daily preceded by one dose of 30 cc of castor oil, was sufficient for the control of the loose stools in many patients. Buttermilk with or without acidophilus milk (yogurt) was of no help, and in fact in some patients these agents aggravated the diarrhea or produced mild abdominal cramps.

Ten patients with diarrhea were treated by withdrawing the offending antibiotic, administering a placebo (a capsule containing either sodium chloride or lactose), and feeding a high protein, high vitamin, and high carbohydrate diet without those foods the patients did not care to eat or to which they thought they were sensitive. For example, 3 of the 10 patients were afraid to eat ripe bananas, while the other 7 believed this fruit to be extremely desirable. All 10 patients were completely well within less than a fortnight and have remained so to date.

Pruritus—The anal pruritus that was associated with loose stools was treated by the application to the perianal area of a bland ointment just prior to defecation. The bulk of the ointment was removed after defecation (the Howard Lilienthal treatment). Whenever this maneuver was impractical, the perianal area was cleansed after defecation with water and a detergent such as Lowilla, and this was followed by the application of a bland ointment, the use of dry tissue paper was interdicted. Pruritus, anal or anogenital, usually without associated diarrhea appeared later than diarrhea and lasted longer.^{6c} In some patients, pruritus disappeared spontaneously, in others it responded easily to simple therapy, but in still other persons it persisted for a variable period of time in spite of aggressive therapy even after the spontaneous or therapeutically induced return of the normal intestinal flora.

Fifty-four patients responded well within less than two weeks to (1) the discontinuation of the offending antibiotic, (2) the interdiction of the use of dry toilet paper, and (3) the topical application twice daily of an

ointment containing 5% sodium caprylate and 5% sodium propionate in Aquaphor, a detergent skin ointment containing hydroxyl animal fats. Additional general measures included the omission of alcoholic beverages, highly seasoned foods, and caffeine-containing drinks (coffee and tea) and the administration of phenobarbital or bromides. Based on past experience,¹¹ in 12 patients it was advised that extirpation of associated anorectal organic lesions be carried out at a propitious time. In general, we agree with Kallet and Davlin¹² that "local therapy which has been useful in other forms of perianal irritation has proved quite effective" in these cases. In our experience it has hardly been "a therapeutic problem of great magnitude."

Twelve patients responded well within a period varying from two to six weeks to the general measures outlined in addition to the topical application of a bland ointment, such as aqua rosae. Hence it is our assumption that "specific antibiotic pruritus," at least in some patients, disappears spontaneously, it is our belief that spontaneous recoveries have been grossly underestimated. We believe this in spite of Manheim and Alexander's views to the contrary.⁷

Four patients responded quite satisfactorily, first to the parenteral administration of corticotropin (ACTH)¹³ and later to the topical application of free alcoholic hydrocortisone ointment, while eight others tested experimentally failed to derive any benefit from either hormone. These hormones are at best "morbistatic" and are seldom curative in anogenital pruritus of other causes. The cases of the remaining seven patients have remained unsolved problems.

Acidophilus milk (yogurt) was first used by Willcox^{6c} but later was championed by Manheim as a veritable cure or, along with buttermilk, as one capable of producing striking improvement. This does not conform with our experience. These substances were given in large amounts (to the point of toleration) alternately or in combination to 10 patients. The procedure was of questionable benefit in three patients and utterly ineffective in the remaining seven. Nine of these 10 patients have subsequently responded quite well to the ointment of sodium caprylate and propionate applied topically¹⁴ plus the general measures already outlined.

Sodium caprylate administered by mouth has yielded good results in several patients but has failed in others⁶, our studies are still in progress. Recent studies showed that intestinal moniliasis may be successfully eradicated by the administration of caprylic acid-resin complex in capsules that contain 48 to 52% of the complex fatty acid. This agent has little, if any, inhibitory action on the growth of normal intestinal flora.¹⁵ The high incidence (over two-thirds) of recurrence⁷ is not in accord with our experience and suggests inadequate initial therapy.

10a Dearing and Heilman¹⁰ Fairlie and Kendall²

11 Turell R. Treatment in Proctology. Baltimore: Williams & Wilkins Company, 1949.

12 Kallet H. L., and Davlin L. P. Anal Irritation Following Use of Antibiotics. Am. Pract. & Digest Treat. 3: 177 (May) 1952.

13 Turell R. Corticotropin and Cortisone in Intractable Anogenital Pruritus. J. A. M. A. 152: 866 (June 27) 1953.

14 Turell R. Newer Therapeutic Procedures in Pruritus Ani. New York J. Med. 51: 1408 (June 1) 1951.

15 Neuhauser I. Successful Treatment of Intestinal Moniliasis with Fatty Acid-Resin Complex. A. M. A. Arch. Int. Med. 92: 61 (Jan) 1954.

or failure to eliminate the contributory factors. Also, none of our patients has developed conditions necessitating surgery.

COMMENT

While micrococcic enteritis is serious, we agree that the anorectal syndrome though annoying, is not "of a serious nature."¹¹ The large number of patients observed by proctologists is no indication of the actual incidence of the adverse side-effects of antibiotics. It should be kept in mind that in the United States, during the year of 1951 alone 324 tons of penicillin have been produced, 167 tons of streptomycin and 250 tons of the broad spectrum antibiotics.¹² Furthermore, "more than one-half of all prescriptions written during 1951 were for antibiotics and Americans spent one-third of their entire drug bill during that year for antibiotics. In each instance, these figures appear to have shown continuous increase during 1952 and 1953."

It seems to us unfair and certainly unjustified for men other than qualified chemotherapists to make the statement that "physicians have prescribed antibiotics with increasing frequency, and, unfortunately, at times without specific indication."¹³ The intelligent clinician is neither influenced nor deterred by the possible side-effects when there is a clear-cut indication for the use of an antibiotic. Exaggerated fear of complications may lead to ineffective therapy as exemplified by the following experience. A urologist in charge of a service in a large general hospital told one of us that he has discontinued the use of oxytetracycline because of side-effects and is now employing chloramphenicol instead because of the

alleged lesser incidence of side-effects. Evidently, he did not know that large amounts of the latter drug are excreted in the urine in a biologically inactive form¹⁴ and that it is an inferior antibiotic for the treatment of urinary tract infection. In 1953, Miller and Walker reported administering as much as 5 gm of oxytetracycline orally daily for four months to 70 patients with tuberculosis, and all tolerated this large amount of the drug quite well. No deviations from the normal were found proctosigmoidoscopically in patients who experienced diarrhea. Similar observations have been made at Harlem Hospital where antibiotics, especially the mycins, have been used extensively and in large quantities and dosages since their inception.

SUMMARY AND CONCLUSIONS

While micrococcic enteritis may be of serious import, the results of this study concur with the belief that the anorectocolonic side-effects of antibiotics are not of a serious nature. Our study also supports Kallet and Davlin's statement that "local therapy which has been useful in other forms of perianal irritation has proved quite effective" in these cases. We have found also that spontaneous recoveries occur in quite a few patients; this matter has been much underrated as has the effectiveness of placebo in many patients. We also found that acidophilus milk (yogurt) and/or buttermilk as a sole form of treatment are completely ineffective in either diarrhea or pruritus.

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16 Herrell, W E. Consideration of Newer Antibiotics. *Am J Surg* 82: 638 (Nov) 1951.

THE VALUE OF A ROUTINE ABDOMINAL FILM

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and

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The practice of taking a routine chest roentgenogram for all patients admitted to the hospital is tending to become universal. Few clinicians question the value of such films, they have come to be accepted as a part of routine studies, similar to the blood cell count and urinalysis. This is true despite the fact that the percentage of films with abnormal findings is small compared to the number of "negative" chest roentgenograms. Assay of the exact value of a routine chest roentgenogram is difficult. One of the most comprehensive of community-wide chest roentgenogram surveys has been made by the division of chronic disease and tuberculosis of the Public Health Service¹ during the past five years. In all, 5,840,897 chest roentgenograms were made on 70 mm film in 17 different communities scattered over the United States. The percentage of abnormal roentgenograms varied from 2% up to 7.2%, with an average of about 3.6%. These so-called positive roentgenograms were read as such not

only because abnormalities suggestive of tuberculosis were noted, but because nontuberculous chest diseases as well as cardiovascular abnormalities were questioned on the initial roentgenogram. An attempt was made to obtain 14 by 17 in roentgenograms of the persons who had "positive" results on 70 mm films, so that, with these larger films, some of the so-called positives could be excluded. However, for practical purposes, it appears justifiable to use the figure of 3.6% as an average for the number of chest roentgenograms that will be "positive" for pulmonary disease, cardiovascular abnormalities, or both, in the general population.

Routine chest roentgenograms for patients admitted to the hospital are more productive than a routine survey on a general population of essentially normal persons. Figures vary tremendously according to the type of hospital, the type of patients admitted, and the care with which the roentgenograms are studied and reported by the roentgenologist. At the Veterans Administration Hospital in Grand Junction, Colo., a 152-bed general medical and surgical hospital, the percentage of admission roentgenograms reported as showing "possible tu-

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1 Community-Wide Chest X-Ray Survey, Publication No. 222 Federal Security Agency. United States Public Health Service, 1952.

berculosis" has varied from 0.6 to 3.87%, with a general average of 2.19%. The percentage of admission roentgenograms reported as suggestive of other pulmonary disease, cardiac abnormality, or both, varied from 11.1 to 21.6%, when calculated at three month intervals over a period of three years—the average percentage being 16.02. From this it appears that as far as positive findings are concerned, the routine admission chest roentgenogram is of value in about 18% of the cases. It is recognized that negative findings in a chest roentgenogram are as important in a complete and final diagnosis as positive findings. The chest roentgenogram survey was originated and given great impetus by public health organizations conscientiously motivated toward the eradication of tuberculosis in the community and toward the cure of diseased persons by the logical procedure of finding the disease early. It may justly be claimed that much of the great recent progress in diminution of tuberculosis as a major threat to the community can be attributed to early case finding by roentgen examination. The finding of intrathoracic disease other than tuberculosis in these studies has convinced physicians in general, and the internist especially, of the value of the routine chest roentgenogram as a subsidiary part of the physical diagnosis. These routine admission studies of the chest are ordered not with the view of tuberculosis case finding but as part of a broad assay of a patient's health status.

Much information in a complete physical appraisal of the health status of a patient could be obtained by supplementing the routine chest roentgenogram with a roentgenographic survey of the lower half of the torso. It may be claimed that the chest lends itself to easier roentgenographic analysis because of air contrasts and that no preparation of the patient is necessary for chest survey. While this is true, its importance is magnified out of all proportion. The urologist depends greatly on the preliminary kidney, ureter, and bladder film of the abdomen and is generally well qualified in its analysis from the urologic viewpoint. The gastroenterologist and general surgeon can recognize much that is informative in a plain film of the abdomen.² The orthopedist uses what is essentially a plain film of the abdomen as part of his roentgen study of the lumbar spine. Just as the posteroanterior view of the chest may be of value to the cardiologist as well as to the chest specialist, so may a survey roentgenogram of the abdomen be of value to the gastroenterologist, urologist, obstetrician, gynecologist, and orthopedist in their assays of a patient. When it is considered that attempted palpation of the kidneys and spleen for estimation of size is commonly difficult and that even in the case of the liver, palpation is frequently inconclusive, especially in larger persons, the value of a method that could supply this information becomes evident. As to the argument that preparatory cleansing procedures must be undertaken to obtain a useful roentgenogram, we have undertaken to show that this is not generally true. It has been observed that an ambulatory or recently ambulatory person is commonly a better subject for survey by an abdominal roentgenogram than is the person long hospitalized and prepared by intestinal cleansing. As our statistics indicate, it was seldom that an abdominal roentgenogram taken of a newly admitted patient was unsatisfactory for inter-

pretative survey purposes, and in many of these instances the faults were technical rather than due to lack of cleansing preparation.

The routine abdominal roentgen survey was more economically feasible and seemed likely to be more valuable if the same roentgenogram could be used for a variety of systems and by several specialists. The kidney, ureter, and bladder roentgenogram taken with the patient supine is best adapted to study of several systems as a standard procedure for technical reasons. Lying on the back allows greater standardization in roentgenographic studies than would lying prone, the patient is generally more comfortable and less likely to move when lying on his back, so that there is likely to be less technical difficulty due to body motion, the lumbar spine and the viscera most difficult to palpate, the kidneys and spleen, are brought closer to the film and therefore are shown more sharply defined with less exaggeration due to distortion by a longer object-film distance, and the bony pelvic canal is presented in a far more opened view with the patient in the supine position than in the prone position. Moreover, it is somewhat of a fallacy to consider that the prone position will bring calcified gallstones closer to the film, for most right lateral views of the gallbladder filled with contrast medium will show that it lies in the middle third of the anteroposterior diameter of the abdomen. We have, for these and other considerations, adopted the kidney, ureter, and bladder roentgenogram made with the patient in the supine position as routine in these studies. Such a roentgenogram of the abdomen nearly always has enabled us to judge whether the liver, spleen, or kidneys are enlarged or abnormal in shape or position. The psoas muscles are nearly always identified. Calcifications in the abdomen and bony pelvic canal are readily demonstrated. Much information is presented regarding the lumbar spine and pelvis with regard to alignment of vertebrae, old and recent fractures, inflammatory and neoplastic bone disease, and calcium content of the skeleton in nutritional and endocrinological disease.

It is to be emphasized that the roentgen survey of the lower half of the torso usually is not completely adequate when a significant pathological process is demonstrated and should be supplemented by proper additional roentgenograms made with the patient in other positions by spot focus, or with contrast mediums. The survey roentgenogram should be regarded, just as the chest roentgenogram, as a sort of hunting expedition in a search that may disclose disease. The likely usefulness of such a study seemed to warrant a series of kidney, ureter and bladder films, all done without special preparation on a consecutive group of newly admitted patients regardless of complaint or history, at the Veterans Administration Hospital in Grand Junction.

METHOD

For 242 patients consecutively admitted to this hospital in the fall of 1952, roentgenograms of the kidney, ureter, and bladder were routinely made. Almost all of the patients were men between the ages of 18 and 83; some had had previous admissions to this hospital. A

2. Ettinger, A., and Eiken, M., Value of Plain Film in Renal Mass Lesions (Tumors and Cysts). *Radio* 57: 372-382, 1954.

few were admitted for tuberculosis follow-up, another small group were admitted for dental work only, and many were healthy young men admitted only for tonsillectomy, herniorrhaphy or hemorrhoidectomy. Approximately 10% were admitted for only examination and observation in connection with pending compensation claims and less than 25% were considered seriously ill at the time of their admission. Exposures were made on the 14 by 17 in film without previous preparation of the patient at the same time the routine chest roentgenogram was taken. The exposure was made with the patient in the anteroposterior position, supine, and in expiration. The Potter Bucky diaphragm and a 1 mm aluminum filter were used, at a tube distance of about 40 in., with an average of 68 kv, 200 ma, and exposure time of 1/2 second.

A study was made of the quality of these films, they were divided into four groups ranging from those showing fine detail throughout to films of poor quality on which it seemed effort had been wasted. Of 242 films, only 5, or 2%, were totally unsatisfactory because of poor technique or obscuration. Fifty-two films, or 21.4%, were just acceptable, classified as fair or improvable by better technique or preparational procedure. One hundred fifty films, or 62%, were classed as good, showing adequate detail throughout, and comparable with the average film for which preparational measures, such as cleansing enemas, had been taken. Thirty-five films, or 14.4%, were classed as excellent in detail shown. We felt that with 76% of the films showing good or excellent detail without preparation of the patient, and with 98% of films acceptable, preparational procedures in the scout film could be omitted except in exceptional circumstances. A second film can always be made after preparational measures if indicated, a great saving of time and effort is obviously accomplished by making the first film without preparation.

The 242 roentgenograms were read by one radiologist and graded as follows: group 0, film not abnormal, of value only as a negative study, 92 (37%), group 1, film of value because it later formed a part of other studies, 114 (47%), group 2, film of value because it confirmed or reinforced clinical diagnosis, 58 (24%), and group 3, film of value because it disclosed information that otherwise might not have been obtained, 26 (11%). The percentages add to over 100 because some of the films could be classified in more than one division.

The 92 cases in group 0, representing roughly one-third of the total, were valuable in diagnosis. They helped to rule out such conditions as partial intestinal obstructions, abnormal calcifications, lumbar spine changes, and abdominal tumors. For the 114 cases classified in group 1, the routine kidney, ureter, and bladder film served as a portion of other roentgen studies, quite a number of which were suggested by the initial film, and led to a more accurate and definitive diagnosis. Since it is routine practice at this hospital to take a scout film as a portion of the gastrointestinal, gallbladder, barium enema, and genitourinary studies, a routine kidney, ureter, and bladder film is not "wasted" in terms of either the cost of the film or the technician's time. In the case of a lumbar spine study, it can take the place of the anteroposterior view. Some of the 58 cases in

group 2, representing 24% of the total, were cases of hypertrophic changes in the dorsal spine, but such cases were not included unless they were severe or unless other definite clinical history or positive physical findings justified a diagnosis of hypertrophic arthritis.

The 26 cases in group 3, 11% of the total, are the most interesting and probably the most valuable from the standpoint of diagnosis. These encompassed a large variety of conditions, many of which might easily have been overlooked if roentgen studies had not been made, including hydronephrosis, subluxation between the second and third lumbar vertebrae, empyema of gallbladder, heavy metal in buttocks, rotoscoliosis of the lumbar spine, arthritis of the sacroiliac joint, early Paget's disease, calcified fecolith of appendix, bony fusion of the sacroiliac joints, cholelithiasis, adynamic ileus, calcification in spleen, possibly due to tuberculosis, severe osteoporosis, hepatomegaly, tuberculous spondylitis, air in biliary radicles (led to final diagnosis of choledochoduodenal fistula), asymptomatic left renal calculus, and calcified mesenteric adenitis, possibly due to extrapulmonary tuberculosis.

COMMENT

Admittedly a series consisting of 242 cases is small, however, it is felt that even this small series indicates the value of routine roentgenograms of the kidney, ureter, and bladder of all patients admitted to the hospital. In 114 cases, or 47% of this series, the admission film would have been taken as a portion of other roentgen studies, thus it was economically justified. In addition, in 58 cases, or 24%, the routine film added considerably to the other diagnostic studies of the patient by giving objective confirmation to conditions that otherwise would have remained merely clinical impressions. Finally, in 26 cases, or 11% of the total, kidney, ureter, and bladder films were of value because they disclosed information that might otherwise have been overlooked, the figure of 11% of otherwise unsuspected disease is not insignificant. These figures compare favorably with figures given for the value of routine chest roentgenograms, either in a community-wide service or on hospital admission. It is our opinion that a routine kidney, ureter, and bladder survey film, without preparation of the patient, should be made a part of the admission studies on all hospitalized patients.

Tuberculous Meningitis—Tuberculous meningitis was uniformly fatal prior to the advent of streptomycin therapy. Whereas short courses of streptomycin apparently saved an occasional patient, adding PAS and prolonging the original course of therapy markedly improved the percentage of survivors. The addition of isoniazid holds promise of further improving the survival rate. Although one may expect further losses with longer observation periods, we have reason to hope for a recovery rate of 75 per cent or more with the use of drugs currently available. Obviously some will survive only to die later of causes other than tuberculous meningitis per se. The presence of associated miliary tuberculosis has not affected the survival rates of our patients adversely since initiation of prolonged combined chemotherapy. All five patients with combined miliary-meningeal tuberculosis, in the group herein reported, were living 8 to 18 months after beginning treatment.—E. J. Des Autels, M.D., and K. H. Pfuetze, M.D., Current Treatment of Tuberculous Meningitis. A Preliminary Report, *Annals of Internal Medicine*, June, 1954.

STREPTOCOCCIC INFECTION OF THE "FIBROEDEMA" OF MELKERSSON'S SYNDROME

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Melkersson's syndrome was described in 1928.¹ A patient had recurrent facial paralysis and edema of the upper lip. Later lingua plicata was noted as a third symptom.² In 1947 Kettel reviewed the literature and reported five additional cases.³ The syndrome may be familial but is not hereditary. The first attacks of paralysis have occurred before the patients were 18 years old and usually before adolescence. Both facial nerves have been affected alternately, and the edema, ordinarily recurrent at first but permanent later, has followed the initial attack of paralysis. Rarely edema and paralysis have occurred simultaneously. In a few patients the intervals between the occurrence of paralysis and the attacks of edema have been long. Confined to the upper lip and cheeks (occasionally the lower lip or the circum-orbital tissues have been involved) a series of transient attacks similar to angioneurotic edema have led in most patients to permanent fibrosis. These attacks have been noninflammatory, although sections of the fibrotic tissues have suggested mild chronic inflammation. There have been overgrowth of connective tissue, evidence of edema, atrophy of the muscle fibers, and round cell infiltration.² This edema has not always been associated with recurrent paralysis. New and Kirch⁴ reported on 67 patients with permanent deformities of their lips and cheeks (occasionally of the lower lips and eyes), but only 13 had paralysis of the facial nerve. In these patients mild recurrent attacks of edema preceded the fibrosis. Severe deformities were corrected by plastic surgery.

The cause has not been discovered for either the edema or the paralysis. Clinically the first few attacks of edema have appeared angioneurotic, but later sections of the fibrotic tissues have suggested mild chronic inflammation. New and Kirch believed that lymphangitis and recurring erysipelas could be excluded. A patient, now past 50, with this syndrome has been under medical observation since early childhood. She has had recurrent facial paralysis and edema with fibrosis of the lips and cheeks with a superimposed streptococcic infection. The treatment of this infection was reported in 1933.⁵

REPORT OF A CASE

The patient was born in 1898. There have been no known hereditary atopic allergies in the family. Her mother had recurrent facial erysipelas and an aunt had recurrent facial paralysis. Paralysis occurred when the patient was 7, 14, 16, 26, and 28, twice on the right and three times on the left side of the face. Recovery was nearly complete after each attack. Now, at 56, she has but slight residuum on the left. Photographs show that her lips became fuller in early adolescence. Ridges and areas of local thickening appeared on the buccal mucous membrane and a small spot on the lower lip would occasionally be swollen for a few hours. When 17, she felt ill one afternoon. The following morning her lips and cheeks were swollen, tense and red. She had no fever. The swelling never completely subsided and repeated attacks occurred at intervals of three or four months with rapidly deforming fibrosis. In May 1918, a physician in Chicago excised strips of fibrous tissue from both

lips. Attacks occurred at intervals of one year after the operation but these were febrile and with less edema. In 1919, during the first attack following the operation, a hemolytic streptococcus was cultivated from the maxillary sinuses. A vaccine made with this strain did not prevent attacks. In 1925 and subsequently febrile attacks occurred at intervals of two, three or four months. A physician in New York advised irradiation. The patient was not benefited.

In 1927⁵ hemolytic streptococci were isolated from the buccal mucous membranes and from the deep layers of the skin. Vaccines with this strain and later with three strains recovered from patients with erysipelas seemed to lengthen the intervals and reduce the severity of the reinfections, but these favorable results were only temporary. The attacks were even severer after administration of vaccine was stopped. After this trial with vaccines the patient was inoculated with filtrates of cultures of hemolytic *Streptococcus* grown from four to eight days. The recurrences became milder and less frequent and ceased after a series of inoculations lasting two years (1932).

On two occasions since the last severe attack the lips and cheeks have been slightly swollen and inflamed. Each time the patient was given a short course of inoculations with streptococcic filtrates. The previously infected tissues are still mildly sensitive to streptococci; inoculations with large doses of filtrate will cause moderate swelling and inflammation of the face. In the interval since 1933 she has had a sympathectomy for hypertension.

COMMENT

In this otherwise typical history of a patient with Melkersson's syndrome, streptococcic infection was superimposed on the edema and fibrosis of the lips and cheeks. This is unusual; no similar infection has been reported. In retrospect it seems that some of the other patients treated for chronic infectious edema⁶ may have had an edema and fibrosis such as that described by New and Kirch preceding their streptococcic and micrococcic infections. Only 13 of the 67 patients they reported on had recurrent paralysis.

Longcope⁶ has reviewed the literature on angioneurotic edema and given his personal experience. He considers hereditary edema, so frequently fatal, a separate entity. The common or sporadic edemas occur largely in patients with a familial history of atopic allergic disease. In reality they are only giant urticarial lesions, and patients with edema often have urticaria at some time. Those patients in whom an allergenic excitant has not

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1. Melkersson, E. A Case of Recurrent Facial Paralysis with Angioneurotic Edema, *Hygien* 90: 734, 1928.

2. Rosenthal, C. Gemeinsames Auftreten von (rezidivierender familiärer) Facialislähmung, angioneurotischem Gesichtödem und Lingua plicata in Arthritis-familien. *Zisch ges Neurol u. Psychiat* 131: 475, 1931.

3. Kettel, K. Melkersson's Syndrome. Report of 5 Cases with Special Reference to Pathologic Observations. *Arch. Otolaryng.* 46: 3-1 (Sep.) 1947.

4. New, G. B., and Kirch, W. A. Permanent Enlargement of the Lips and Face Secondary to Recurring Swellings and Associated with Facial Paralysis. *Clinical Entity*. *J. A. M. A.* 100: 1220 (April 22) 1933.

5. Stevens, F. A. Chronic Infectious Edema. *J. A. M. A.* 100: 1754 (June 3) 1933.

6. Longcope, W. T., and Winkler, W. L. *Symptoms and Signs of Medicine*. New York, Thomas Nelson & Sons, Inc., 2, p. 647, 1940.

been found have often had obscure foci of infection. These giant urticarial lesions have been paler than the surrounding skin. They have affected all parts of the body but especially easily distensible tissues such as the lips and the tissues surrounding the eyes. Rarely in severe attacks a patient has had fever. One region may be repeatedly involved with relapses and recurrences, but there has been no residual edema or fibrosis. However, Longcope does mention certain patients reported on in the literature with edema of the face followed by permanent deformities.

The edema associated with recurrent facial paralysis in Melkersson's syndrome is unlike angioneurotic edema in several respects. First, it frequently leads to local fibrosis, which may develop rapidly or gradually after several mild recurrent attacks of edema, second, the edema occurs only around the eyes and mouth and on the cheeks, third, it may be familial, but it is not hereditary nor does it occur especially in patients with a family history of atopic allergies, and it has not been associated with urticaria, fourth, one in five patients has had recurrent seventh nerve paralysis, and fifth, while angioneurotic edematous tissues are pale, if the lesions of this edema are acute they may be red, tense, and glistening. Possibly a distinctive term should be used to describe this lesion. "Idiopathic fibroedema" would appear suitable.

Local infection with *Streptococcus* is the only unusual feature in the history of this patient. The clinical picture changed when definite infection occurred. So far

no similar infection has been reported, although streptococcal and occasionally micrococcal infections of edematous tissues are not unusual if the edema is the result of some hereditary, congenital, or acquired abnormality of lymphatic drainage. Repeated local infection of itself may also lead to fibroedema. Authors who have previously described the edema occurring as a symptom in this syndrome did not believe there was local infection but, nevertheless, observed that the lesion should not be confused with erysipelas. It is possible that subclinical local infection or adjacent infected foci are responsible for this fibroedema. It should not be confused with the much commoner angioneurotic variety.

CONCLUSIONS

Idiopathic fibroedema is an edema of the lips or circumorbital tissues with fibrosis of the affected areas. Lingua plicata and, in one out of five patients, recurrent peripheral facial paralysis have been associated with it in a syndrome described by Melkersson. Fibroedema must not be confused with sporadic angioneurotic edema, which never causes fibrosis, is often associated with urticaria, and occurs largely among patients with an allergic (atopic) family history in whom some allergenic excitant or focus of infection may be responsible. The course and nature of this fibroedema suggest local subclinical infection. Recurrent attacks of erysipelas or overt chronic infection (chronic infectious edema) may be superimposed on the fibrosis.

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STUDY OF TUBELESS METHOD FOR DETERMINING GASTRIC ACIDITY AND pH VALUES

SPECIAL CONSIDERATION OF THE SUBTOTALLY RESECTED STOMACH

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and

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The inadequacy of the titrimetric method for measuring gastric acidity with Topfer reagent as indicator for the study of gastric anacidity in the intact stomach has been emphasized previously.¹ More recently² this inadequacy has been shown to be perhaps even greater if the method is used to evaluate the effect of subtotal gastrectomy on the secretion of the remaining gastric pouch. In both of these studies we found the determination of hydrogen ion concentration of the gastric contents to be the most precise method for establishing the true status of gastric acidity when no titratable free acid is present. It is vital for the ulcer patient who has had a subtotal gastric resection to develop an anacidity in the remaining gastric pouch

if he is to be safeguarded against the development of new ulcers. We believe that it is important to study gastric secretion in these patients very shortly after operation and at frequent intervals thereafter until a satisfactory gastric anacidity² is established and to treat such patients as potential ulcer patients until such an anacidity does develop.

Since the results of our previous studies² indicated the need for repeated gastric analysis in most patients after subtotal gastric resection, an evaluation of the quinimum cation exchange resin test proposed by Segal, Miller, and Morton³ was undertaken especially to determine its applicability in such patients. This tubeless technique would be more acceptable to the patient for repeated tests since it makes gastric intubation unnecessary and would simplify the problem for the examiner, because when intubation is used in these patients the tip of the Rehfuß tube must be placed with especially careful fluoroscopic control in the remaining gastric pouch and should be checked at the end of the fractional gastric analysis in order to be

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1 Shay, H., Komarov, S. A., and Berk, J. E. Some Fallacies in the Clinical Measurement of Gastric Acidity with Special Reference to the Histamine Test, *Gastroenterology* 15: 110, 1950.

2 Shay, H. Importance of Appraising the True Gastric Acidity After Subtotal Gastrectomy, *J A M A* 155: 1131 (July 24) 1954.

3 Segal, H. L., Miller, L. L., and Morton, J. J. Determination of Gastric Acidity Without Intubation by Use of Cation Exchange Indicator Compounds, *Proc Soc Exper Biol & Med* 74: 218, 1950.

certain that the tip of the tube had not slipped through the gastric stoma

In order to determine the suitability of the tubeless method for the above purpose, pH values of the gastric contents were determined during the course of the quininium resin test. Quinine extraction from the urine was made from aliquots of all urine specimens both by the ether-sulfuric acid technique described by Kelsey and Geiling⁴ and employed in the Segal, Miller, and Morton procedure and the benzene-sulfuric acid method based on the studies of Brodie and others,⁵ and used in the modification of this procedure by Flood and his associates.⁶ Since cations other than H⁺ can replace the quinine in the resin to a small degree in the two hours of the test, small amounts of quinine can be liberated, absorbed, and excreted in the urine in patients with gastric anacidity. A quantity of 12 mcg of quinine for the Segal-Miller and 25 mcg for the Flood technique may be excreted by the patient with anacidity. Between 12 and 25 mcg with the former and 25 to 50 mcg with the latter is considered to be in the equivocal zone, and determinations above 25 mcg and 50 mcg respectively, have been shown to indicate the presence of free gastric acid.

EXPERIMENTAL METHODS

The patient reported to the institute at 8:30 a.m. after a 12-hour fasting period. At this time the patient emptied the urinary bladder completely, and this specimen of urine was discarded. A Rehfuß tube was passed, and the tip of the tube was visualized fluoroscopically and placed in the most dependent portion of the intact stomach and just above the gastrojejunal stoma in the patient with subtotal gastric resection. Any slack in the tube was withdrawn and the tube then fixed to the chin with adhesive. With a Luer all-glass syringe, 0.5 cc of gastric juice was withdrawn to determine basal pH in some of the patients. Hydrogen ion determinations were made with a Beckman pH meter with micro cup attachments so that only two-drop quantities of gastric contents were required. The remainder of the gastric sample together with the contents of the micro cup after the pH was determined were recovered with the glass syringe and returned to the stomach through the Rehfuß tube, care being taken to follow this reinjection with the injection of 3 cc of air to assure return of the tube contents to the stomach.

Caffeine sodiobenzoate, 250 mg stirred into one-half glass of water, was administered orally at 9 a.m. At 10 a.m. the patient emptied the urinary bladder, and this specimen was used for the control determination of urinary substances fluorescent in ultraviolet light. Two grams of quininium cation exchange resin (Diagnex) suspended in one-fourth glass of water was administered orally. An additional one-fourth glass of water was then given to assure ingestion of the whole dose of indicator. Two hours later, at 12 noon, the patient again emptied the urinary bladder and this specimen was used for determination of excreted quinine.

Simultaneously, just before the quininium resin was administered, 30 minutes after the resin was given, and at 15-minute intervals during the remainder of the two hours of the test, pH determinations on specimens of gastric contents, obtained and treated in the manner described above, were made. In addition, during this pro-

cess, the glass syringe and micro cup were rinsed thoroughly with distilled water after each gastric specimen was returned to the stomach, and all washings were pooled. To this pool were added the washings through and around the gastric tube after its removal from the stomach at the end of the two-hour test period. The complete washings were then acidified with 0.1N hydrochloric acid and the specimen treated exactly as the urine specimens in order to determine the amount of quininium-exchange resin or liberated quinine that might have been removed in our procedure to obtain the pH readings. We found that insignificant amounts of quinine, in the range of only a few micrograms, were lost to the stomach by the entire procedure, a loss that could have had no effect on the amount of quinine excreted in the urine. From each sample of urine, quinine was extracted by the two methods⁸ indicated above.

RESULTS

Only a few tests were performed in patients with intact stomachs, since our results in essence duplicated those already reported for the quininium resin test by Segal.⁹

TABLE 1—Gastric Acidity and pH in Patients with Intact Stomachs and Adequate Acid Secretion

	Case 1	Case 2	Case 3	Case 4
pH 1 hr after caffeine	1.49	1.42	1.23	1.41
30 min after resin	1.62	2.12	1.3	2.2
45 min after resin	ng*	0.50	2.05	2.85
60 min after resin	4.25	0.45	1.31	1.75
75 min after resin	2.10	0.20	2.12	ng*
90 min after resin	1.89	3.65	1.78	1.49
105 min after resin	1.91	1.20	1.59	2.1
120 min after resin	2.41	1.54	3.40	
Segal-Miller—control mcg	1.6	0.0	0.84	1.12
Segal-Miller—2 hr mcg	266.8	14.8	310.5	163.2
Segal-Miller—true value mcg	265.2	14.8	309.7	162.0
Flood—control mcg	0.0	0.0	0.0	10.0
Flood—2 hr mcg	29.0	18.4	37.6	14.6
Flood—true value mcg	29.0	18.4	37.6	14.6

* ng = no gastric secretion

and by others.¹⁰ Table 1 gives representative results in four such patients who secreted hydrochloric acid at a rate that assured adequate amounts of free acid in the gastric contents for adequate periods as indicated by the range in pH of samples of these contents. In each case the urinary excretion of quinine determined by the Segal-Miller or Flood technique clearly reflected this secretion.

4 Kelsey F. E. and Geiling E. M. K. Micro Determination of Quinine in Blood and Tissues. *J Pharmacol & Exper Therap* 75: 183, 1942.

5 Brodie B. B., Udenfriend S., Dill W. and Downing G. The Estimation of Basic Organic Compounds in Biological Material. II. The Estimation of Fluorescent Compounds. *J Biol Chem* 166: 311, 1947.

6 Flood C. A., Jones B., Rottor W. M. and Schwarz, H. Tubeless Gastric Analysis. A Study of 100 Cases. *Gastroenterology* 22: 637, 1953.

7 The quininium resin test material used in this study was supplied by E. R. Squibb & Sons.

8 Segal and others. Flood and others.⁶

9 Segal H. L. Determination of Gastric Acidity Without Intubation. Clinical Evaluation of Quininium Exchange Indicator Compounds. *M Clin North America* 25: 593, 1951.

10 (a) Malach M. and Banks B. M. Excretion with a Tubeless Method of Gastric Analysis. *New England J Med* 247: 833, 1952. (b) Conway H. and Meikle R. W. Detection of Achlorhydria Without Intubation. *Brit. M. J.* 2: 1019, 1953. (c) Bralow S. P., Sakis W. and Liebertson M. Technique and Experience with Tubeless Gastric Analysis. *J Albert Einstein M. Coll* 2: 61, 1953. (d) Polard J. H. M., Carballa A. and Bolt R. J. Determination of Gastric Secretory Function by Measurement of Substances Excreted in the Urine. II. An Evaluation of the Tubeless Method of Gastric Analysis. *J Lab & Clin Med* 42: 240, 1954.

In this group, as well as in the patients listed in tables 2 and 3, the reading of the hour control specimen of urine was invariably higher with the Segal-Miller extraction method than with that obtained with the Flood ex-

TABLE 2—Gastric Acidity and pH in Patients with Intact Stomachs and Anacidity

	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11
Basal pH				7.52	7.43	7.72	7.08
pH 1 hr after caffeine	ngs	7.12	ngs	7.56	7.69	7.28	7.32
30 min after resin	6.61	6.62	5.71	6.92	7.33	6.32	6.71
45 min after resin	ngs	6.98	6.80	6.08	6.70	6.03	6.75
60 min after resin	ngs	7.09	6.63	6.21	6.91	6.00	6.68
75 min after resin	ngs	7.09	6.82	6.20	6.41	7.34	6.56
90 min after resin	6.34	7.06	6.79	6.39	6.38	7.07	6.51
105 min after resin	ngs	7.28	6.62	6.41	6.85	7.11	6.61
120 min after resin	6.51	7.15	6.78	6.39	6.81	7.01	6.81
Segal-Miller—Control mcg	0.0	6.5	0.0	3.80	0.0	3.36	0.0
Segal-Miller—2 hr mcg	0.0	5.18	0.0	4.64	0.0	3.92	0.2
Segal-Miller—true value mcg	0.9	0.0	0.0	0.84	0.0	0.56	0.2
Flood—control mcg	0.0	1.30	0.0	0.0	0.0	0.0	0.0
Flood—2 hr mcg	0.0	4.44	0.0	0.0	0.0	7.84	4.6
Flood—true value mcg	0.0	3.14	0.0	0.0	0.0	7.84	4.6

* ngs = no gastric secretion

the test dose of resin remained within the limits set for each of the methods for gastric anacidity. Table 3 shows the results of 15 studies in 13 patients after subtotal gastrectomy. In the patients in cases 12 and 21, two studies are recorded. These were obtained at 2 weeks and 3 months after operation in the former and at 19 and 20 months after operation in the latter. In these, as in the patient with an intact stomach, when the pH of the gastric contents remains above 3.5, the urinary output of quinine during the test falls within the range of anacid values for both methods (cases 12B, 13, 14, 16 and 17).

The low urinary excretion of quinine in each of the patients in cases 15 and 18 indicates the presence of gastric anacidity. The results of the quinine resin test in these would not, however, adequately reflect the secretion of acid by the gastric mucosa, since the change in pH in the patient in case 15 from 6.85 one hour after caffeine administration and just before the resin was given to a value of 3.74, 45 minutes after ingestion of the resin, indicates that not only is acid being secreted by the parietal cells but that the pH of the gastric contents for at least part of the test period was such as to permit peptic activ-

TABLE 3—Gastric Acidity and pH Measured in Patients with Subtotal Resection

	Case 12		Case 13	Case 14	Case 15	Case 16	Case 17	Case 18	Case 19	Case 20	Case 21		Case 22	Case 23	Case 24
	A	B									A	B			
Basal pH		7.31	7.03	8.01			7.53		6.81		6.47	6.42			
pH 1 hr after caffeine	1.81	6.99	7.15	7.43	6.85	7.39	7.28	6.19	6.71	2.91	3.93	3.16	1.91	3.65	4.32
30 min after resin	1.89	6.90	6.95	6.92	6.27	7.41	7.08	5.29	6.70	4.92	3.79	ngs	2.30	2.32	3.19
45 min after resin	2.17	6.19	7.30	6.68	3.74	7.21	7.39	5.12	6.50	6.80	2.79	2.52	2.50	4.61	3.11
60 min after resin	1.88	6.82	7.22	6.78	5.89	ngs	6.68	4.21	6.52	2.70	2.51	6.89	2.82	2.51	3.92
75 min after resin	2.19	6.91	ngs*	6.62	6.81	ngs	6.12	5.90	5.78	2.10	ngs	4.19	3.99	2.39	5.41
90 min after resin	2.05	6.93	7.25	6.71	6.00	ngs	6.17	5.35	4.80	1.78	3.71	ngs	1.98	2.22	5.89
105 min after resin	1.61	6.60	ngs	6.95	5.16	ngs	6.61	5.22	5.71	2.12	4.63	3.72	2.70	2.15	5.61
120 min after resin	1.74	6.70	7.11	6.76	5.00	ngs	4.81	4.59	5.61	2.52	2.78	2.31	6.48	2.89	4.62
Segal-Miller—control mcg	0.0	1.80	16.0	4.60	0.0	6.0	6.24	0.0	0.0	4.8	0.0		0.0	0.0	11.3
Segal-Miller—2 hr mcg	60.4	11.20	0.0	5.47	5.0	12.3	17.25	3.84	11.06	12.6	26.18	9.60	39.0	142.8	12.24
Segal-Miller—true value mcg	60.4	9.4	0.0	0.89	5.0	6.3	11.01	3.84	5.06	7.8	26.18	6.0	39.0	142.8	1.04
Flood—control mcg	0.0	0.0	0.0	3.04	0.0	2.0	0.0	0.0	1.5	2.4	0.0	1.20	0.0	0.0	2.8
Flood—2 hr mcg	149.6	14.0	11.25	7.8	5.0	14.35	17.25	2.8	25.44	49.2	93.56	25.2	67.2	184.8	59.16
Flood—true value mcg	149.6	14.0	11.25	4.76	5.0	12.35	17.25	2.8	26.90	46.8	93.56	24.0	57.2	184.8	56.86

* ngs = no gastric secretion

traction reagent. The two hour urine excretion of quinine, after the resin was administered, almost invariably yielded a higher reading with the Flood method than with the Segal-Miller technique. In the two patients (cases 4 and 11) in whom the output of quinine was higher with the Segal-Miller method, the differences from those obtained by the Flood method were not significant. There were, however, cases among the patients with subtotal gastric resection in whom the higher values for quinine excretion obtained with the Flood method properly reflected the presence of free hydrochloric acid in the stomach as measured by the pH values (case 24). Such findings would indicate that there was a more complete extraction by the benzene reagent and not that it was merely a difference of frame of reference for the ether and benzene extractions that was involved.

Table 2 lists the results in seven patients with intact stomach and gastric anacidity. In each instance in this group, the pH of the gastric contents remained well above pH 3.5 throughout the test period, and in each case the excretion of quinine in the urine after administration of

ity, even though no titratable free hydrochloric acid was present throughout the test period. This is true also, but to a lesser degree, in the patient in case 18. In such cases the tubeless method for indicating the presence of free acid in the stomach would not be suitable for studying the physiological adequacy of the subtotal gastric resection. The need to measure such adequacy after subtotal gastric resection has recently been stressed.² The adequacy can be assumed to be established for the patient only when the gastric contents during the entire course of a satisfactory fractional gastric analysis remains at pH 5 (proteolytic neutralization point of Hollander¹¹) or higher. Only then can we be reasonably certain that the subtotal gastric resection has been followed by a "degree of anacidity" that will protect the patient against the development of new ulcer disease.

In the patient in case 19, the Segal-Miller method yielded an excretion of quinine at the anacid level (5.06 mcg) while the Flood technique gave results in the equivocal zone (26.9 mcg). However, in the patients in cases 20 and 21B, the results of both methods for quinine excretion gave false anacidity levels, since the pH values of the gastric contents indicated unquestionably that free

11 Hollander, F. J. What Constitutes Effective Neutralization of Gastric Contents? *Am J Digest Dis* 6: 127, 1939

hydrochloric acid was present for considerable portions of the test period

The presence of titratable free hydrochloric acid in the gastric contents almost throughout the entire test period in the patients in cases 12A and 23 as indicated by the pH values obtained, is also shown in the values for quinine excretion obtained by both methods. In the patient in case 24, in whom pH values of the gastric contents reached the low points of 3.11 and 3.19, indicating the presence of some titratable free acid for at least part of the test period, the quinine excretion determined by the Segal-Miller method (1.04 mcg) yielded a false anacidity value, while the result of the Flood technique (56.36 mcg) properly reflected the secretion of acid. In the patient in case 21A the Flood technique disclosed the presence of free hydrochloric acid, Segal-Miller extraction gave a reading just above the equivocal zone.

It would appear from our study of the quinimum resin test in the patient with a subtotal gastrectomy in relation to the pH values in the residual gastric pouch obtained during the period of the test that, in addition to the pH of the gastric contents, there is a time factor of exposure as well that is important in effecting a release of adequate amount of quinine from the resin. This is suggested by the results in several of the patients. Thus, in the patient in case 22, both methods of extraction yielded results indicating the presence of free acid in the stomach. However, the urinary excretion of quinine measured by each method is much lower than that which would be expected from the pH values obtained (Compare case 12 with those in table 1). A similar conclusion may be drawn from the results in the patient in case 24. Rapid emptying of the administered resin from the gastric pouch is believed to be responsible for cutting down the time of exposure of the resin to the hydrochloric acid secreted in such a pouch, and this leads to the false anacidity results that we have encountered. Conway and Meikle^{10b} in 1953 reported one patient with a false anacidity result after subtotal gastrectomy.

The data in table 3 especially emphasize the superiority of the benzene over the ether extraction of the quinine from the urine, and the differences in the results obtained on the control specimens of urine by the two methods also indicate the greater specificity of the benzene for the extraction. The results of our studies of the quinimum cation exchange resin test in the patient after subtotal gastric resection indicate that this test is not suitable for use in such patients. These results would make us differ somewhat with the conclusion recently reached by Pollard, Carballo, and Bolt.^{10a} These investigators found this test "of extreme value in patients with partial gastrectomies because of the unreliability of the gastric tube method in these cases." Such an unreliability, we believe, would apply only if in doing a fractional gastric analysis in a patient who has had a subtotal gastrectomy one attempts to obtain at each extraction the amount of gastric contents usually required for titration of acid. It would not occur if only extractions sufficient for pH determination with the micro technique are sought.

Certain other features connected with the quinimum resin test deserve comment. Segal⁹ as well as Malach and Banks^{10a} report an occasional patient in whom the tubeless method indicated the presence of free gastric hydro-

chloric acid, but when the results were checked with the tube method, no free acid was found. An error in this direction does not necessarily have to rest on the quinimum resin test, for other contributory factors could be present. Thus if in patients in whom such an error occurred, a low rate of gastric secretion were present and if intubation was being done for the first time, especially in an emotionally labile person, depression of secretion could occur to yield an anacidity on that day. Such apparent errors could have been avoided if pH determinations and urinary excretion of quinine were made during the same test. Furthermore, barring such an event, if free gastric acidity is low, even well-trained technicians can misread the end point for Topfer's reagent when the gastric juice has a pH even down to 3.0 or less.

However, the indication of the presence of anacidity by the quinimum resin test and the finding of titratable free hydrochloric acid by the tube method presents a more serious error, since it implies that factors other than the pH of the gastric contents can play an important part in the result obtained with the resin test. We have indicated, from our data in patients who have had subtotal gastric resection, that the rate of gastric emptying may be one such factor. It is possible that rapid gastric emptying of the intact stomach may also produce a similar result. Malach and Banks^{10a} report two patients with duodenal ulcer in whom the resin test indicated an anacidity but the tube method showed free hydrochloric acid. Since in uncomplicated duodenal ulcer rapid gastric emptying may occur, it is quite possible that this same mechanism was responsible for the erroneous result of the resin test in these two patients. One wonders, too, whether altered intestinal absorption of quinine or its excretion by the kidney ever plays a part in producing such errors. In any case, the fact that false anacidity values can be obtained with the resin test implies that the pH of the gastric contents is not the sole determining factor in the urinary excretion of quinine during this test.

SUMMARY AND CONCLUSIONS

The results of our studies in patients after subtotal gastric resection indicate that the tubeless method for determining the presence of free gastric hydrochloric acid in the remaining gastric pouch is not suitable for these patients. The reason for this probably rests in the too rapid emptying of the quinimum resin that may occur from the remaining gastric pouch. Since a certain time of exposure to a proper pH appears to be necessary for an adequate exchange of the quinine by the H⁺ ions to occur, the rapid emptying can result in the method yielding false anacidity values. With the Segal-Miller test the "degree of anacidity" cannot be established, and an exact definition is essential in studying the gastric acid secretory response after subtotal gastric resection for gastric or duodenal ulcer. The benzene-sulfuric acid extraction of the quinine excreted in the urine is superior to the ether-sulfuric acid method. From the results obtained in the control specimens of urine the benzene-sulfuric method is probably also more specific. We feel the determination of pH of the gastric contents during an adequate fractional gastric analysis is the best method for studying gastric acidity after subtotal gastric resection.

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AN EXPERIENCE IN THE FORMATION OF A COMMITTEE ON ACCIDENT PREVENTION IN CHILDREN

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and

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Accidents of all types are now the leading cause of mortality and one of the leading causes of morbidity in children under 10 years of age.¹ In fact, accidents are responsible for one-third of all the deaths occurring in children in this age group. The American Academy of Pediatrics has taken cognizance of these grim facts by instituting a committee for the prevention of accidents. The current chairman of this committee is Dr George Wheatley, a pediatrician who is a vice-president of the Metropolitan Life Insurance Company. The facts presented at a seminar held in October, 1952, at an academy meeting² inspired one of us (W W H) to introduce a similar program into our community.³ Although we did not expect the movement to spring into complete being as Pallas Athene sprang full panoplied from the brain of Zeus, we were hardly prepared for the obstructions the program encountered. We launched our efforts in this program with the feeling that accidents are akin to sin and that everyone would be "agin" them. The opposition that our efforts received and the quarters from which this opposition emerged offered us at least a modicum of surprise.

Our *modus operandi* was as follows. We first gathered into a small group pediatricians representing all geographical sections of our county, and representatives from local health departments, the United States Public Health Service, and the major groups of nurses engaged in public health work. A public-spirited attorney acted as secretary of the group. After this nucleus had met several times, their thinking had been crystallized and their ideas channeled into definite plans for a coordinated and effective community-wide program. As a result of these conferences a public meeting was called at a large community health center for the purpose of launching the program in the community. Leaders of official and volunteer agencies were invited, including the health commissioners of the major political subdivisions, the coroner of the county, representatives from the board of education, the safety council, the public health nursing groups, the university department of pediatrics, and the parent-teacher organizations, members of the press, radio, and television, and numbers of public-spirited citizens. At this meeting we presented our ideas, including a brief historical review of the movement, the scope

of the problem in our own county, a plan of approach to the difficulties, and our own enthusiasm for the amelioration of an increasingly important health situation.

PRELIMINARY STEPS

We stated that our first objective was to collect statistics to determine the number of accidents occurring per year that involved children, the kinds of accidents, and, if possible, the effect of age, sex, season, and living conditions on the various types of accidents. Then, with this introduction, we sat back to wait for the anticipated approval and offers of cooperation. The first comments were mildly critical, but soon a rising crescendo of opposition engulfed us. One of the health officers stated that there was no need to collect any further statistics since he already had all the data that were necessary. The only statistics he had, however, were those collected by the police, and they recorded only accidents that were fatal, those that involved motor vehicles, those that happened on public property, and those that might involve some criminal implication. Except for these limited figures no one knew anything about the number or type of accidents that involved the children of our community.

Representatives of the safety council stated and recognized that their home safety program was not particularly oriented to the prevention of accidents in children and that almost nothing had been done in working for accident prevention in the preschool child. Another health official stated that the idea of accident prevention was old and would be hard to "sell" to the public. We will show later in this paper that this idea, far from being "old," is new, vital, and dynamic. When carried on to its full fruition it not only will decrease accidents but will improve almost every facet of child-parent relationship—the very essence of pediatrics and in every sense the foundation structure of our civilization.

The group concluded that the program was worthy, that it had merit, and that it could best function under the aegis of an organization such as the Safety Council of Greater Cleveland. We also approached the Academy of Medicine with the idea of working as a committee of the academy. The academy wished to incorporate our group into their health education committee, but we felt that this might submerge our identity and threaten our autonomy. After numerous conferences a compromise was reached by which we were made a special committee of the academy and also a section of the safety council. Thus we became a part of both organizations and received recognition and aid from both.

We were now ready to begin our real work, our first efforts were to define the problem and outline the scope of the accident hazard by collecting statistics. We approached 18 hospitals in Greater Cleveland, and 11 cooperated by keeping records in their emergency rooms.

1 Aikman, J, and others. Round table discussion. *Pediatric Emergencies*. Pediatrics 2: 209-221 (Aug) 1948. Press E. The "Accident Problem," J A M A 135: 824-827 (Nov 29) 1947.

2 Wheatley, G M. Child Accident Reduction. A Challenge to the Pediatrician, Pediatrics 2: 367-368 (Sept) 1948. Shaw E B. Accidents, Childhood's Greatest Health Hazard. read before the joint meeting of the American Academy of Pediatrics and the National Safety Council, Oct 17, 1950.

3 Hunt, H C. The Challenge of Child Accident Prevention, read before the joint meeting of the American Academy of Pediatrics and the National Safety Council, Oct 17, 1950.

of the number of accidents involving children under 14 years of age. The statistics obtained in one short year presented many interesting possibilities in that their final analysis may point to definite patterns in the accident picture as regards sex, age, economic level, and season. It is our purpose here to mention only gross figures. The total estimated number of accidents involving children was 35,000 per year. The Greater Cleveland Hospital Council collected similar figures on the total accident picture, involving children and adults. The total numbers might be termed astronomical, only those accidents severe enough to require hospital admission of the victim required the equivalent of a 400-bed hospital occupied to capacity every day of the year. If one were able to ignore the human anguish involved, just the economic difficulties of these accidents point to this as a community problem of the first magnitude.

Our statistical survey showed that 60% of all accidents occurred in the home, that 67% of all accidents were due to falls producing fractures, lacerations, and bruises, 4% to the ingestion of poison, 5% to ingestion of foreign bodies, 5% to dog bites, 5.5% to auto accidents, and 3.5% to bicycles and skates, that 65% occurred in males and 35% in females, that 93% of accidents in children less than 1 year old occurred in the home, 76% in children 1 year to 5 years old, and 41% in children 6 to 14 years old, and that 44% of all accidents occurred during May, June, July, and August. We used these figures to spur local pride in the spirit of competition to reduce accidents and to institute community-wide measures for accident prevention.

EDUCATION AND PUBLICITY

The second point in our program to help prevent accidents in children involved the use of the resources of the public health nursing program. Public health nurses make an average of 150,000 home visits per year. They instituted as part of their routine health suggestions some practical ideas on accident prevention. A discussion on accident prevention was also made part of the prenatal classes. Mothers-to-be were urged not to leave their infants unattended on bathing tables, to be sure that all safety pins were closed and out of reach, and to avoid using sharp-cornered or hard metal objects such as talcum powder boxes as toys. They were given many other instructions that would help to prevent the commonest accidents that involve infants.

The third point in our program was the establishment of a speakers' bureau. A group of interested and qualified persons, including physicians, nurses, and public health educators, made themselves available for talks on safety to many groups, principally the various parent-teachers associations.

As a fourth point we attempted by every means at our disposal to promote public safety in the press and on the radio and television. We made an effort to suggest and influence legislation on matters concerned with child safety. We called municipal legislators and initiated and lobbied for ordinances such as those requiring the compulsory removal of unused iceboxes.

It is worth while to summarize the projects of a public nature that were initiated by this small group. This list is evidence that a group with interest and determination

can accomplish much in effective public education. The committee had no full-time or paid personnel. Everything was accomplished after the discharge of the regular duties of the members, and each committee worker had extensive private responsibilities.

Programs and Exhibits—Dr. George Wheatley was the main speaker at one of our local hospitals in a program devoted to child safety. While in the city Dr. Wheatley gave recorded interviews on television and on radio news programs. He received good press coverage, with special articles by the feature writers who routinely write columns on child care. The Health Museum of Cleveland, the outstanding health education project of its type in the world, presented a fine exhibit borrowed from Duke University and held an institute and seminar on this subject. The Safety Council of Ohio had a three day meeting in the community, and the pediatricians presented a program for one morning that covered every phase of the child safety program. Three to four lectures a month were given by physicians to groups of parents. The radio station operated by the Cleveland Board of Education inaugurated a program dealing with child safety at school and in the home, it is heard several times during the semester by children from 6 to 10 years of age.

Printed Material—The newspapers have given continuous publicity in the interest of accident prevention. Various types of poisoning—particularly aspirin, lead and phenobarbital intoxication—were given widespread coverage. This was quite effective, judging by the number of calls received by private physicians from their patients after these articles appeared. Pharmaceutical companies and drug trade associations agreed to budget part of their advertising funds to publicity promoting the cause of child safety. A public utility company eagerly agreed to include a short article on safety in a booklet that it mails to its customers every month. The mail from this company goes to one and a half million addresses each month along with its statements. This is one of those rare arrangements whereby everyone benefits with no additional cost to anyone.

Talks with Private Patients—Perhaps our most important effort was to attempt to inculcate on our private patients in our own offices a good pediatric approach to accident control in the manner outlined by Dr. Harry Dietrich of the University of Southern California. We accepted and taught the idea that accident prevention in children, like good manners, is a form of behavior, and as such can become so ingrained that it is a part of the child's nature. He then conducts himself all through his life with a minimum of risk, effortlessly and naturally.

BENEFITS

We demonstrated to our patients that a good approach to accident control in childhood returns benefits not only in a reduced accident rate but in improvement of many facets of child-parent relationship. When a child learns that his parents' love and affection will not permit him to do any truly injurious act, he becomes more convinced of that love than by any other parental act. The knowledge he acquires from their educational efforts augments his self-confidence so that, if the whole idea is intelli-

gently and quietly applied, his sense of security becomes deeply rooted.^{4a}

The most difficult part of the program is to evaluate in any exact manner the benefits resulting from the whole program. It is probably impossible to say that the accident rate is truly reduced, principally because one is always dealing with a new generation of parents. The effort must be continuous and enduring and always aimed at a new group. Perhaps we can best express our own feelings by quoting President Woodrow Wilson. When someone in his presence deprecated religion as a moral

force amongst men because of the many amoral influences readily observed in the actions of human beings, he countered by saying, "But think how bad things might be without the moral restraint of any religion at all."

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4 (a) Dietrich, H F. Accident Prevention Through Pediatric Practice read before the joint meeting of the American Academy of Pediatrics and the National Safety Council Oct 17 1950 (b) Dietrich, H F. Accidents Childhood's Greatest Physical Threat Are Preventable J A M A 144 1175 1179 (Dec 2) 1950 (c) McIntosh R. The Pediatric Approach to Accident Control Through Research read before the joint meeting of the American Academy of Pediatrics and the National Safety Council, Oct 17, 1950

THE OPTIMAL DOSE OF MORPHINE

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The optimal dose of a drug may be defined as that dose that provides the desired therapeutic effects with a minimum of undesirable side-effects. The ease and safety with which a drug is administered is frequently related to the precision with which one can define an optimal dose for a majority of patients requiring the drug. In regard to morphine specifically, there are important reasons why its optimal dose should be carefully defined. First, it is usually employed in the treatment of acute pain when there is a premium on rapid and effective relief and little opportunity for leisurely trial and error individualization. Second, morphine can produce unpleasant and even dangerous side-effects, so that the flexibility in dosage is not as great as is permissible with a drug like penicillin, for example. Third, in regard to the risk of addiction, the view has been expressed that the use of minimal effective doses of morphine reduces the incidence of euphoria,¹ and evidence has been presented that the development of physical dependence is directly related to the size of the dose administered. Fourth, it is customary for investigators to compare old and new analgesics with morphine as a standard of reference, the optimal dose of the latter drug is particularly appropriate as such a standard.

In a study in man of the pain-relieving power of morphine, Denton and Beecher³ reported that the dose-effectiveness curve broke sharply at 7 to 9 mg (of sulfate) per 70 kg of body weight, and that double this

amount provided no further significant increase in analgesia. Since this original report, the clinical evaluation of analgesic agents in this laboratory has continued, with improvements in patient selection and evaluation of pain relief. Attention during the past five years has been concentrated primarily on steady wound pain, rather than on all types of postoperative discomfort, and on major surgery involving body cavities and extremities, rather than on the greater variety of operative procedures first utilized. In a paper published four years ago, Keats, Beecher, and Mosteller⁴ found that 15 mg of morphine provided 83.3% pain relief as compared with 73.8% relief following administration of 10 mg of morphine. The practical importance of the dose-effect problem is such that it seemed to be worth restudying with our more sharply defined technique. The average pain relief from 10 mg of morphine is at present 65%. This decrease from the 90% relief reported in the earlier paper³ is due presumably to a severer average pain in the patients now chosen for study. The 65% average success rate of 10 mg of morphine appeared to afford greater opportunity for demonstrating any increased effectiveness of the 15 mg dose than did the original 90% rate. The present report is concerned not only with the analgesic effectiveness of these two frequently employed clinical doses but also with their side-action liability, an essential consideration in determining the dosage of any drug.

METHODS AND RESULTS

Incidence of Pain Relief—Patients from the general surgical, orthopedic, urologic, and gynecologic wards were studied postoperatively in regard to pain relief from 10 and 15 mg doses of the phosphate salt or morphine per 70 kg of body weight. For brevity, "morphine" will be used throughout the paper instead of morphine phosphate. The weights always refer to the salt. All doses were given subcutaneously. These doses were alternated in each patient, and the order of administration was alternated from patient to patient. The drugs were given by code, and evaluation of pain relief was made by technicians unaware of the nature of the medication, according to the principles described in earlier papers.³ Only "paired data" were employed for comparison of pain-

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1 Lee L E Jr. Symposium: Can the Euphoric, Analgesic and Physical Dependence Effects of Drugs Be Separated? II. With Relation to Analgesia and Clinical Experience. Fed Proc 2: 191 (Sept) 1943.

2 Andrews, H L, and Himmelsbach C K. Relation of Intensity of Morphine Abstinence Syndrome to Dosage. J Pharmacol & Exper Therap 81: 288 (July) 1944.

3 Denton, J E, and Beecher H K. New Analgesics. II. A Clinical Appraisal of the Narcotic Power of Methadone and Its Isomers. III. A Comparison of the Side Effects of Morphine, Methadone, and Methadone Isomers in Man. J A M A 141: 1146 (Dec 17) 1949.

4 Keats, A S, Beecher, H K, and Mosteller F C. Measurement of Pathological Pain in Distinction to Experimental Pain. J Appl Physiol 3: 35 (July) 1950.

5 Denton, J E, and Beecher, H K. New Analgesics. I. Methods in the Clinical Evaluation of New Analgesics. J A M A 141: 1051 (Dec 10) 1949. Keats and others.⁴

relieving power, i e., doses of 10 and 15 mg administered to the same patient as successive medication for the same type of pain. If a patient received more than one pair of doses, he was given an "average" pain relief score for each drug. (For example, if patient A received only one dose each of drugs X and Y, and both doses were effective, each drug was recorded as having provided 100% relief. If patient B received two doses each of drugs X and Y, and only one of the X doses but both Y doses were effective, the drugs were given 50% and 100% scores, respectively.) Two groups of patients were studied, about one year apart. In the first group, 66 patients, the average per cent relief of pain of those receiving 10 mg and 15 mg doses of morphine was 65.8 and 76.8, respectively. The average per cent relief of pain in the second group, 56 patients, receiving the same doses, was 69.3 and 78.7, respectively. In the statistical evaluation of these correlated data, the difference in analgesic effectiveness between the two dose levels for each group of patients is not significant at the 5% level, but pooling the data from both groups yields significance.

A further analysis of pain relief was possible in the case of 171 doses of 10 mg and 175 doses of 15 mg of morphine. The average figures refer to the incidence of significant pain relief. This criterion is arbitrarily defined as 50% or more relief of pain at 45 and 90 minutes after medication. This standard might theoretically mask, in part, a superior performance by a drug that more frequently provided complete relief or less frequently failed to provide any relief. The 346 doses referred to gave information on this point since records were kept as to whether pain relief was complete, moderate (50% or more but less than complete), slight (less than 50% but more than 0), or completely lacking. These data, obtained in 105 patients, are presented in table 1 (the checks refer to the evaluations made at the 45 and 90 minute intervals). Here the trend is again in favor of the larger dose, with 15 mg doses producing complete relief at one or both checks (categories VI and VII) slightly more frequently than do 10 mg doses. There is no particular suggestion that the 15 mg dose fails to provide any relief any less frequently than does the 10 mg dose.

Duration of Pain Relief—A second important consideration in the measurement of analgesia is the duration of pain relief after a dose of an analgesic agent. This was evaluated by calculating the time that elapsed between administration of one dose of morphine and the next dose. No dose was considered that was not followed by a return of pain great enough to require a narcotic. The return of pain is probably modified by the hypnotic as well as the analgesic effect of morphine. In addition, the return of pain is only one factor determining the dosage interval, others include the relative thresholds of various patients for requesting medication, the opinion of the nurse on duty as to when a patient needs medication (the orders were written so that patients could receive medication every two hours if necessary), and the delays involved when a busy nursing staff has a large number of patients requiring attention at the same time. With large enough groups and with each patient serving as his own control, however, it seems reasonable to suppose that many of these other factors will cancel out and that the return of pain will be a primary determinant.

An average duration for 10 mg and for 15 mg of morphine was derived for each patient who received at least one dose of each. Thus all 15 mg doses received by a patient for steady wound pain provided one mean and all similar 10 mg doses provided a second mean. The difference between these means was determined for each patient. The differences for all the patients in each of the two groups studied were then subjected to a rank test for paired replicates.⁶ With 10 and 15 mg doses of morphine, the mean duration of analgesia experienced by a group of 48 patients was 422 ± 47 minutes and 523 ± 46 minutes respectively. In a group of 51 patients receiving the same doses, the duration of analgesia was 441 ± 25 minutes and 468 ± 38 minutes respectively. In the first group, the duration of pain relief was significantly greater (at the 2% level) after the 15 mg doses than after the 10 mg doses. The second group did not show a significant difference between the two doses, even when analyzed by a conventional "t" test for correlated data.

Toxic Effects—Ten healthy male volunteers between 21 and 35 years of age were studied for the incidence of side-reactions, including respiratory depression, after

TABLE 1—Pain Relief Patterns After Morphine Administration

Dose of Morphine Mg	Total No of Doses	No. of Doses Producing Various Responses*						
		I	II	III	IV	V	VI	VII
10	171	7	8	25	15	70	18	23
15	175	6	2	15	13	65	27	44

* I No relief at either check

II No relief at one check, slight relief at one check

III Slight relief at both checks

IV Slight relief at one check, moderate relief at one check

V Moderate relief at both checks

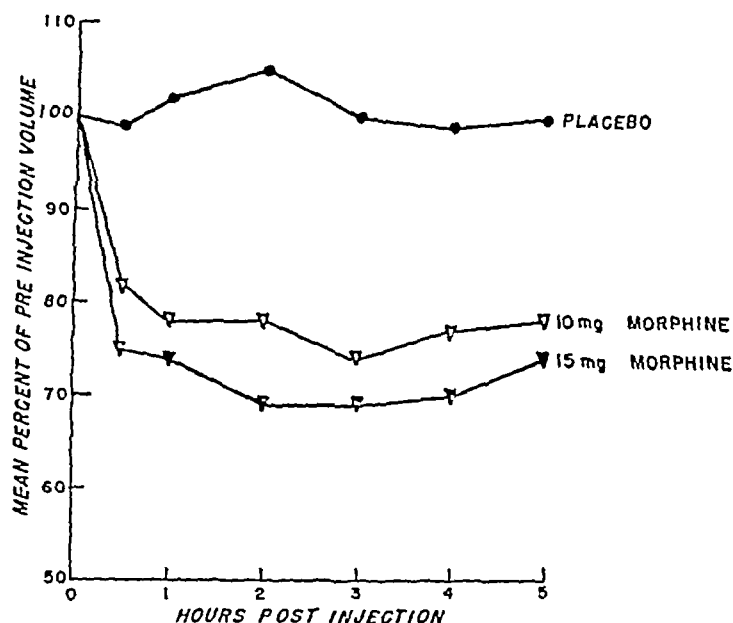
VI Moderate relief at one check, complete relief at one check

VII Complete relief at both checks

administration of 10 mg. and 15 mg of morphine. These two doses and a placebo, identified by code letter only, were administered subcutaneously to each subject in random order. At least three days elapsed between each experiment. Each subject reported early in the morning, having omitted breakfast. After a rest period of 30 minutes, he breathed through a mouthpiece (the nose was occluded with a clip) for three to five minutes to become accustomed to the apparatus. The average respiratory rate and minute volume over a three minute period were then measured, the latter by passing the inspired air through a dry-test flow meter. (Such measurements were shown to check well against those obtained with a Benedict-Roth apparatus.) Measurements were first made while the subject breathed room air. He then inspired 5% carbon dioxide for nine minutes. Measurements of respiratory rate and minute volume (similar to those for room air) were obtained during the last three minutes. After these control readings, the medicament was injected, and similar measurements were made at 30, 60, 120, 180, 240, and 300 minutes after injection of medication. The subjects were required to walk for two minutes after each period of measurement and were then given questionnaires to fill out. These questionnaires were designed to elicit the major subjective side-effects produced by morphine, as determined by previous

6 Wilcoxon F. Some Rapid Approximate Statistical Procedures. New York: American Chemical Co., 1949.

studies in this and other laboratories. Except for short periods of walking, subjects sat quietly in easy chairs for the entire period of observation. They were allowed to read but were not permitted to smoke or sleep. The respiratory rate showed no significant change after administration of the drugs. The result on respiratory minute volume for room air and carbon dioxide were, in general, parallel. The magnitude of change and the consistency of results, however, were greater in the carbon dioxide data. The latter will therefore be described and discussed.



Respiratory depression caused by two doses of morphine and a placebo

The average depression caused by the two doses of morphine and the placebo is shown in the figure. The ordinate shows minute volume of respiration in terms of the percentage of preinjection volume, arbitrarily called 100%. Total respiratory depression for the five hours of observation, measured by the area between the curve for a particular experiment and the 100% line, was analyzed. A chi square test (rapid method of Friedman⁷) was run on all the data to determine whether a significant difference existed between the three treatments (placebo, 10 mg of morphine, and 15 mg of morphine). This yielded significance, so the rank method for paired replicates used above in the analysis of duration of analgesia was used to compare pairs of treatments. There was a significant difference in effect on respiratory minute volume between placebo and either dose of morphine. Although the average values for all points on the 15 mg curve are lower than on those for 10 mg, the difference between the two doses is not statistically significant.

The incidence of toxicity in the 10 subjects was higher for most symptoms in the case of the 15 mg dose

(table 2). By the rank test described above, a comparison of the two doses showed a significant difference, at the 5% level, in incidence of side-effects per person.

The findings described suggest that when one is dealing with patients in severe pain after operation, the use of 15 mg of morphine will provide a slightly higher average success rate than will 10 mg, and the average duration of analgesia will tend to be somewhat longer with the larger dose. On the other hand, the use of the larger dose is associated (at least in our healthy subjects) with a higher incidence of undesirable side-effects.

COMPARISON WITH OTHER STUDIES

With these results in mind, it seemed appropriate to survey the literature for other evidence bearing on the problem of the optimal dose of morphine. The excellent agreement of the analgesic data in two groups of patients studied almost a year apart, and the previous finding of Keats, Beecher, and Mosteller⁴ that 15 mg of morphine provided about a 10% increase in analgesic effectiveness over that of 10 mg of morphine are reassuring as to the reproducibility of the results in our own laboratory. Nevertheless, the experience of one group of investigators studying certain types of patients with one particular analgesimetric technique is useful in direct proportion to the transferability of their data to other situations and other techniques.

Cullen and Gross⁸ have reported on the treatment of postoperative pain in 338 patients subjected to a great variety of surgical procedures. Of this group, 251 received 10 mg doses of morphine, and 87 received 5 mg doses. Ninety per cent of the patients received satisfactory relief, a figure remarkably similar to the 93 to 94% originally reported by Denton and Beecher³ in a similar set of patients. Gaensler⁹ found that 10 mg of morphine,

TABLE 2—Side-Effects of Morphine in Ten Subjects

Effect	10 Mg of Morphine	15 Mg of Morphine
Shakiness	4	4
Heavy-headedness	7	6
Lightheadedness	2	4
General malaise	4	8
Headache	3	3
Nausea	4	6
Difficulty in concentrating	7	9
Difficulty in focusing eyes	5	6
Itchiness	4	5
Apprehension	0	3
Apathy	3	7
Hiccups	2	4
Dry mouth	8	9
Palpitation	1	3
Dizziness	6	8
Dulling of senses	8	6

given subcutaneously, was the most effective of seven analgesic drugs in increasing the pain threshold to experimental distention of the common bile duct in patients convalescing from biliary surgery. Lee,¹⁰ studying 776 patients on the medical, surgical, and emergency wards of a large general hospital, described 10 mg of morphine as the usual minimal clinical analgesic dose. Similar findings were described by Lee for patients with terminal cancer in the absence of previous narcotic experience.

7 Friedman, M. The Use of Ranks to Avoid the Assumption of Normality, *J Am Statist A* 32: 675 (1937).

8 Cullen S C and Gross E G. Analgesic Testing Methods, from Minutes of Twelfth Meeting, Nov 6 and 7 1953. Committee on Drug Addiction and Narcotics, Washington, D C. National Research Council, 1953.

9 Gaensler, E A. Quantitative Determination of Visceral Pain Threshold in Man. Characteristics of Visceral Pain Effect of Inflammation and Analgesics on Threshold, and Relationship of Analgesia to Visceral Spasm, *J Clin Invest* 30: 406 (April) 1951.

10 Lee, L E, Jr. Studies of Morphine, Codeine and Their Derivatives. XVI Clinical Studies of Morphine, Methyldihydromorphine (Metopon) and Dihydrodesoxymorphine D (Desomorphine), *J Pharmacol & Exper Therap* 75: 161 (June) 1942.

Houde and Wallenstein¹¹ have measured the results obtained with 10 mg of morphine in patients suffering from the pain of malignant disease, using both the 50% or more pain relief technique used in our laboratory and their own method for evaluating analgesia, which relies on subjective estimates of severity of pain at intervals after medication, without reference (by the patient) to the premedication level of pain. Their data reveal excellent agreement between the two criteria for assessing pain relief.

Thus the results obtained by different investigators, in patients suffering from pain of various causes and evaluated by different criteria, suggest that a majority of the patients who receive morphine will be satisfactorily treated with 10 mg doses of this drug. It must be emphasized that one will not obtain 90% success rates if one focuses on the patients with severe grades of pain. Indeed, the results of the present report indicate that only two-thirds of the patients with severe pain will receive rapid and satisfactory relief from 10 mg of morphine. All but a few patients will receive some relief from this dose, however, and increasing the dose to 15 mg of morphine will not solve the therapeutic problem for such patients (20% or more, in our hands, are not adequately relieved). A reasonable approach would therefore seem to be to try 10 mg doses (per 70 kg of body weight) in most patients, reserving larger doses for those situations in which 10 mg doses of morphine are found ineffective. There is a need for reliable prognostic data on specific pain situations in which larger doses of morphine or possibly other narcotics might be indicated from the outset. Cullen and Gross⁸ have suggested from their data that types of postoperative pain may differ in their response to different narcotics, according to the region of the body involved. In our laboratory, we have observed a tendency for the first 10 mg (postoperative) dose of morphine to be less effective than subsequent doses by as much as 35%, whereas the differential for 15 mg doses is about one-half this. This decreased early effectiveness of morphine appears to be due to a greater severity of pain in the early postoperative period. It might possibly be due to a need for priming doses and the establishment of certain blood levels, however, these patients have in most cases had a preanesthetic dose of morphine. This might be considered a priming dose. Obviously there is a need for information on the details of pain relief from narcotics in specific clinical situations, but the over-all picture is one of reliable performance in a majority of instances from 10 mg doses of morphine.

An additional reason for using smaller doses of morphine is the fact that increased toxicity results from larger doses. Our own small group of healthy subjects indicates a significant increase of unpleasant side-reactions in the specific test situation as one increases the dose from 10 mg to 15 mg. Comroe and Dripps,¹² in a study of healthy volunteers, found side-effects to be more frequent in those subjects receiving 15 mg of morphine than in those receiving 8 mg, with a further increase in toxicity from doses of 20 mg. In 20 healthy volunteers in our laboratory (unpublished data) the incidence of the following side-effects after 8 mg and 15 mg doses of morphine was compared: headache, nausea, itchiness,

warmth, dry mouth, dizziness, ataxia, sleepiness, and shakiness. The mean number of side-effects per person (plus or minus the standard error of the mean) was 6.8 ± 0.4 for the 15 mg group and 3.4 ± 0.9 for the 8 mg group, a significant difference. In the paper of Denton and Beecher,³ 57 similar subjects were studied. About one-half of the group received 10 mg. of morphine, the other half, 15 mg, both groups received a placebo. No significant difference was observed between the placebo data in the two groups with respect to 12 major side-effects. After administration of morphine, however, a significant difference between the two groups was observed for six of these side-effects, anorexia, nausea, vomiting, difficulty in focusing the eyes, fatigue, and pallor. For each of these side-effects, the incidence was higher with the 15 mg dose.

That some of the side-effects of morphine are not only unpleasant to a patient but also detrimental to his well-being (for example, anorexia, nausea, vomiting, and respiratory depression) is certainly true. How close a parallelism exists between the incidence of such effects in healthy young males and in sick persons is less certain. It is generally agreed that the recumbent position is less likely to bring on some of these effects (such as nausea) than is the ambulatory state. Yet Lee and Pfeiffer¹³ found that 7 out of 10 volunteer subjects who received 20 mg of morphine and who "remained in a supine position throughout the experiment to decrease the incidence of nausea and vomiting" spontaneously stated that they were nauseated, and 5 vomited. Nausea or vomiting after administration of morphine has been reported in 43% of 103 bed patients by Steele,¹⁴ in 27% of 105 patients by Narodick and Steele,¹⁵ in 7% of 200 patients by Comroe and Dripps¹² and in 3.5% of 776 patients by Lee.¹⁰ The incidence of morphine toxicity in the patients in the analgesic studies of this laboratory is almost impossible to determine because of the numerous variables involved (anesthesia, surgery, etc.). In the absence of data to the contrary, however, it is assumed that side-action liability from various doses of morphine in normal subjects probably parallels, in rough fashion, side-action liability in patients.

COMMENT

Our data are similar to those obtained by other workers in showing a clear-cut difference between the effects of a placebo and morphine. Loeschcke and associates¹⁶ have stressed the importance of using 4 to 6% carbon dioxide to bring out significant differences. Keats and

11 Houde R. W. and Wallenstein S. L. Studies on Analgesics at Memorial Hospital. Evaluation of Analgesics in Incurable Cancer Patients, from Minutes of Eleventh Meeting, Jan. 9 and 10, 1953. Committee on Drug Addiction and Narcotics, Washington, D. C., National Research Council, 1953.

12 Comroe J. H. Jr. and Dripps R. D. Reactions to Morphine in Ambulatory and Bed Patients. *Surg., Gynec. & Obst.* 221 (Aug.) 1945.

13 Lee R. E. and Pfeiffer C. C. Influence of Analgesics on Human Sensitivity to Morphine on Pain Thresholds in Man. *J. Appl. Physiol.* 4: 193 (Sept.) 1951.

14 Steele J. D. The Narcotic as a Factor in Postoperative Nausea and Vomiting. *Anesthesiology* 1: 470 (July) 1953.

15 Narodick B. G. and Steele J. D. The Use of Dose in Patients Sensitive to Morphine. *Anesthesiology* 10: 25 (May) 1954.

16 Loeschcke, H. H., Sweet, A., Kough, R. H., and Lambert, C. J. The Effect of Morphine and of Meperidine (Demoran, Demerol) upon the Respiratory Response of Normal Men to Low Concentrations of Inspired Carbon Dioxide. *J. Pharmacol. & Exper. Therap.* 105: 176 (June) 1951.

Beecher¹ also found the difference between placebo and morphine more striking with 5% carbon dioxide inhalation than with inhalation of room air. A partial explanation for this fact is that the depression of the respiratory center is manifested first by a decrease in its reserve, as measured by its ability to respond maximally to the driving force of an increased pressure of carbon dioxide in the arterial blood. A second factor of importance, demonstrated by Loeschcke and associates¹⁰ is the increase in alveolar and arterial pressure of carbon dioxide that occurs after a dose of morphine. This acts in a compensatory fashion by increasing the stimulus to the respiratory center and thus masking the effect of the drug in patients breathing room air. A third possibility comes to mind, however. Ordinary respiration is subject to a certain amount of voluntary control. The greater variability in respiratory rate and minute volume between subjects when breathing room air than between the same subjects breathing 5% carbon dioxide¹⁷ suggests that the use of a powerful involuntary respiratory stimulus may override voluntary factors and thus reduce the variance due to nondrug factors.

Because of simplicity of measurement, it is customary in many laboratories to report respiratory minute volume in such studies, although effective alveolar ventilation is actually the information desired. The use of respiratory minute volume rather than effective alveolar ventilation seems partially justified by the failure to find significant changes in respiratory rate after administration of morphine in the doses used. Although this lends support to

the use of this parameter as a valid index of respiratory depression, the technique may lead to an underestimation of the depressant effects of morphine. If the dead space does not change significantly, the per cent decrement in effective alveolar ventilation would be even greater than the decrement in respiratory minute volume, since the percentage of this volume contributed by dead space would be greater after administration of morphine than after administration of a placebo.

SUMMARY AND CONCLUSIONS

A study of pain relief in 122 patients after operation revealed only slight increase in potency and duration of analgesia of morphine when the dose was raised from 10 to 15 mg. The side-action liability and respiratory effects of these two doses were studied in 10 healthy volunteers. In this latter group, a trend was observed toward greater respiratory depression with the larger dose, and a significantly higher incidence of troublesome side-effects was recorded. A review of the literature indicates that 15 mg doses of morphine are probably unnecessary to relieve pain in the majority of patients receiving this drug and are apparently more productive of undesirable side-effects than 8 to 10 mg doses. In view of these findings the routine use of 15 mg seems unwarranted. The optimal dose appears to be 10 mg per 70 kg of body weight.

17 Keats, A. S., and Beecher, H. K.: Analgesic Potency and Side Action Liability in Man of Heptazone, WIN 1161-2, 6-Methyl Dihydromorphine, Metopon, Levo-Isomethadone and Pentobarbital Sodium as a Further Effort to Refine Methods of Evaluation of Analgesic Drugs, *J. Pharmacol. & Exper. Therap.* 105: 109 (June) 1952.

HAZARDOUS EXPOSURE TO SOME SO-CALLED SAFE SOLVENTS

James P. Hughes, M.D., Cincinnati

There is scarcely an industrial plant or a business that does not use some solvents. The kinds and the quantities vary from the can of type cleaner in the secretary's desk to tank car loads of less familiar substances used as degreasing agents in the metal trades or as vehicles in the manufacture of chemicals. There are hazards in the handling of all solvents because of their appreciable volatility. Some danger may be recognized by the user, but flammability and explosiveness are more likely to be considered than physiological action.

The selection of a solvent for a specific purpose depends on technological factors, such as required action, volatility, handling practice (including vapor recovery), the tendency of the substance to leave a residual film on metal surfaces, cost, and availability. The safety aspect may be introduced as a last consideration but, perhaps, only in terms of risk of fire or explosion. The final choice usually is a compromise. While none of the criteria for selection can be ignored, only rarely is it possible to meet all of the demands made. The purchasing agent may suggest a low cost petroleum distillate, the fire chief may

want carbon tetrachloride, and the safety engineer may propose a new preparation of dubious composition labeled "Safety Solvent—Nontoxic." No one will be completely satisfied, and the industrial hygiene adviser may be least satisfied of all. A situation threatening to health now may arise. One solvent may be accepted without question as being "safe" from the point of view of toxicity and then handled quite carelessly, another, recognized as being relatively toxic and requiring some control measures may be inadequately controlled. Trouble can occur in either of these situations as suggested by some recently observed episodes.

PULMONARY EDEMA CAUSED BY EXPOSURE TO METHYLENE CHLORIDE

CASE 1—A Negro male laborer, aged 19, was admitted to Cincinnati General Hospital because of shortness of breath, cough, and substernal pain of eight hours' duration. On his first day of employment in a metal parts assembly shop, he had been given the job of degreasing small copper gaskets by dipping them into an open drum of methylene chloride. He stated that the solvent bath "felt like ice water" on his bare hands. He had smarting of the eyes on bending over the drum, and he noted an oppressive odor. The work area was found to be in a small, dark brick garage. There was no exhaust ventilation or mechanical equipment of any kind for the movement of air. During the latter part of the shift this boy complained of excessive fatigue, weakness, sleepiness, lightheadedness, chilly sensations, and nausea.

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He went home after a total of four hours of work. He fell asleep at once and on waking two hours later felt very weak, short of breath, and had a dry, nonproductive cough. He had substernal pain on coughing and deep breathing.

On admission to the hospital his temperature was 100 F, pulse rate 100 and respiratory rate 42. There was mild respiratory distress. Rales were heard at the base of the right lung and occasionally elsewhere over the chest. On a roentgenogram of the chest there was diffuse, fuzzy infiltration distributed bilaterally throughout both lung fields, characteristic of pulmonary edema (see figure). There was no conjunctivitis or irritation of the skin. The patient was treated with 100 000 units of penicillin intramuscularly every eight hours but did not require the administration of oxygen. Within 12 hours after admission and 18 hours after the last exposure, there was total relief of symptoms, the temperature, pulse rate, and respiratory rate were normal. Faint inspiratory and expiratory rales were still heard at the base of both lungs, but these had disappeared a few hours later. The results of complete blood cell count, urinalysis, blood culture, and blood urea nitrogen determination remained normal. Chest roentgenograms made after intervals of three and five days were normal, and the patient was then discharged from the hospital.

Methylene chloride, also called dichloromethane, CH_2Cl_2 , has come into increasing industrial use as a paint remover, refrigerant, and, less extensively, as a degreasing solvent. It has a pronounced narcotic action, but it is more irritating to the respiratory system and more excitatory than is chloroform.¹ In industrial use only slight acute effects had been reported until 1952 when Moskowitz and Shapiro reported the clinical histories of four men exposed to a high concentration of methylene chloride vapor in a plant where an oleoresin was extracted from vegetable material.² There was loss of consciousness in all of those exposed, with one immediate death and some irritation of the upper respiratory tract of short duration in the others.

Methylene chloride had been described by Browning as "practically harmless" in ordinary use.¹ When the local vendor of the solvent was advised of the illness of the boy referred to above he stated vigorously that some other solvent must have been used, since methylene chloride is so "safe." As a matter of fact, this was found to be the only volatile substance in the shop. The suggested maximum tolerable concentration of methylene chloride under conditions of regular industrial employment is 500 ppm.³ Nevertheless, it should be recognized that this solvent is capable of acting as a pronounced respiratory irritant. The probability of some absorption of the solvent through the skin, in addition to the inhalation of vapor, must be considered as a contributing factor in this case. The halogenated hydrocarbons are excreted chiefly through the lungs, regardless of the mode of absorption. Pulmonary irritation may occur as a result of the excretion, as well as the absorption, of these substances.

ACUTE HEPATITIS FOLLOWING EXPOSURE TO TETRACHLOROETHYLENE

CASE 2—A white male 25 year-old sales trainee of a chemical company was admitted to a hospital in another city in April 1953 because of jaundice, weakness, and anorexia. The onset of symptoms had occurred 10 days earlier with nausea, vomiting, dark urine, light brown stools, and deepening jaundice. For six months prior to the onset of symptoms he had worked on maintenance and repair of solvent circulating systems in dry cleaning establishments. For a period of 11 weeks up to the time that he became ill he had worked regularly on tetrachloroethylene units. His job duties included the refilling of systems with solvent

mechanical repairs and test running of units. When emergency repairs were necessary he often worked 12 to 16 hour shifts and sometimes over week ends without regular days off. Exposure to the solvent, both as liquid and vapor averaged over eight hours per day. When lines were repaired some of the solvent drained out onto the floor. The servicemen often worked near these spills. The cleaning plants usually were hot, humid, and poorly ventilated. No gloves or other personal protective equipment were used. On one occasion this man had spilled a pail of tetrachloroethylene over his shirt and trousers. He noted a burning and tingling sensation of the skin until he changed his garments several hours later. On two or three occasions he became light-headed when the concentration of vapor seemed especially heavy, but returned to work after a short period in fresh air. The odor of tetrachloroethylene became increasingly distasteful to him during this period. For two weeks before the onset of illness there was excessive fatigue and unusual difficulty in rising in the morning.



Roentgenogram of the chest of man exposed to methylene chloride (case 1)

The medical history was not significant except that the patient had received one intramuscular injection of penicillin in the treatment of a brief episode of nausea and vomiting on Feb. 7, 1953, 10 weeks prior to the onset of this illness. He rarely drank any type of alcoholic beverage and never to the point of intoxication. On admission to the hospital he was jaundiced. The results obtained from tests of liver function were grossly abnormal and suggestive of hepatocellular dysfunction. He made an uneventful recovery, but when he was examined four weeks later there was still some evidence of impaired liver function. The results of hemogram and urinalysis were within normal limits.

He was removed from work on systems designed for the use of chlorinated hydrocarbon solvents but continued in the job of sales and maintenance work on other types of solvent units. Ten months after the acute illness he reported that on one or

1. Browning, E. *Toxicity of Industrial Organic Solvents*. New York: Chemical Publishing Company, Inc., 1953.

2. Moskowitz, S. and Shapiro, H. *Fatal Exposure to Methylene Chloride Vapor*. *A. M. A. Arch. Indus. Hyg.* 6: 116 (Aug.) 1952.

3. Threshold Limit Values for 1954. Adopted at the Meeting of the American Conference of Governmental Industrial Hygienists, Chicago, 1954. *A. M. A. Arch. Indus. Hyg.* 9: 10 (June) 1954.

two occasions when he had worked briefly near a tetrachloroethylene system he had experienced nausea immediately on detecting the faint odor of the solvent

Tetrachloroethylene, CCl_2CCl_2 , also called perchloroethylene, is usually placed lowest in toxicity in the ascending series of chlorinated hydrocarbons used as dry cleaning agents.¹ Until recently no unchallenged cases of toxic effects from its industrial use had been reported. Coler and Rossmiller have now presented some clinical observations as being suggestive of impairment of liver function in three men of a group of seven engaged part time in the degreasing of small steel disks in a tank containing tetrachloroethylene.¹ Complaints of headache, nausea, lightheadedness, fatigue, staggering gait, and mental confusion were said to have been common among these men. Concentrations of tetrachloroethylene in the atmosphere of the workroom were reported to average from 232 to 285 ppm parts of air.

In our patient little or no precaution had been taken to avoid inhalation of solvent vapor or contamination of the skin since tetrachloroethylene was regarded as being "practically nontoxic." Symptoms of narcotic effect on several occasions preceded the episode of acute illness characterized by jaundice. It seemed clear that this man had absorbed tetrachloroethylene in substantial amounts. The temporal relationship of the onset of acute hepatitis to repeated hazardous exposures suggests that solvent intoxication was either the sole causative factor in the illness or a contributory factor in rendering the liver susceptible to attack by an infectious agent.

These two cases show injury to workmen resulting from the permission of inexcusably careless handling of compounds of a relatively low order of toxicity, but difficulties also may arise in dealing with solvents accepted as highly toxic when the measures provided for the control of exposure to them are either inadequate or unenforceable.

NAUSEA AND VOMITING CAUSED BY EXPOSURE TO CARBON TETRACHLORIDE

CASE 3—A white female laboratory technician, aged 26, reported to the bureau of industrial health of the Cincinnati Health Department that she had just become ill on the job while handling carbon tetrachloride. She complained of nausea and headache and had been unable to take her lunch. She was employed in the quality control laboratory of a manufacturer of roofing materials. A principal job duty was the solvent extraction of asphalt from samples of roofing paper. This was done according to a standard specification by boiling strips of the asphalt-impregnated paper in a 1,000 ml beaker of carbon tetrachloride on an electric hot plate inside an enclosed hood equipped with an exhaust fan. The strips in the beaker were agitated at intervals of two or three minutes during the 20 minute extraction period. Extracted material and spent solvent were poured off into a drain inside the hood once or twice during each extraction and the beaker was refilled. A glass sliding panel on the front of the hood was raised for this purpose. Temperature and humidity in the laboratory room were controlled by air conditioning.

The girl had worked on this job for a period of two years. Shortly after being hired, on a day when the odor of carbon tetrachloride was strongly perceptible, she had had headache, nausea, and vomiting, causing her to lose three days from work. One year later a similar episode occurred, and again she was off work for several days. She now experienced nausea on days when outside wind velocity was so great as to interfere markedly with the

action of the hood exhaust fan. The illness reported to the health department had its onset on such a day. There was improvement after being outside the laboratory for several hours, although headache persisted during the evening.

CASE 4—A white female laboratory technician, aged 22, employed on the same job as the woman in case 3, complained of nausea and belching and was unable to take her lunch on this day. While she had never been so ill as to remain off work, she did report mild nausea when she detected a heavy odor of carbon tetrachloride in the laboratory. This occurred on the average of once weekly.

An inspection of the laboratory was made a few hours after the report was received. There was said to have been little change in conditions since the onset of symptoms in the technicians. Samples of air collected at the breathing zone of workers standing at the hood contained carbon tetrachloride in average concentrations of from 30 to 344 ppm.

Air movement at the opening face of the hood varied in velocity from zero to 20 ft per minute. It was determined that the exhaust fan was totally ineffectual in removing contaminated air from the hood under certain recurring conditions of outside wind velocity and direction, such as occurred on the day of our inspection. At these times positive pressure was created inside the hood, the direction of air flow was reversed, and contaminated air entered the workroom when the front panel was raised. Recommendations were made for redesigning the exhaust system with the erection of a short stack to carry off the vapor. Periodic determinations of the effectiveness of the proposed changes and added precautions in the handling of carbon tetrachloride by the technicians were suggested. Substitution of a less toxic solvent was not possible because of standardization of the extraction technique.

Carbon tetrachloride, a highly toxic substance, was being used in these cases under conditions erroneously regarded as entirely safe. These two cases are reported for the purpose of emphasizing that complete safety in the handling of this treacherous solvent can be assured but rarely, and never when provisions for the protection of personnel are inadequate or unenforceable. In general, the principle of substitution of a less toxic material should be followed whenever possible.

TOXIC AMBLYOPIA CAUSED BY EXPOSURE TO METHANOL

CASE 5—A Negro laborer, aged 39, was admitted to Cincinnati General Hospital completely blind, complaining of vomiting, abdominal cramps, and severe headache of two days' duration, with increasing loss of vision as the other symptoms had subsided. The onset occurred 48 hours after a Saturday night drinking bout during which he had consumed at least one-half pint of a mixture of wine and about an equal part of a clear, colorless liquid that he had drained from a metal drum at his place of employment.

On admission to the hospital he was not acutely ill. There was slight injection of the conjunctiva. The pupils were dilated equally, measuring 6 mm in diameter. Neither reacted to light except for occasional slight hippus on strong stimulation, but both contracted briskly on convergence. There was slight marginal blurring of the optic disks. The retina was normal except for the peripapillary regions, which were slightly edematous, with reduced transparency and obscuring of the deeper blood vessels. The carbon dioxide capacity of the plasma was 45 vol % and the concentration of chlorides 476 mg per 100 cc. The results of tests of liver function were within normal limits, the hemogram was normal. There were numerous hyaline casts in the urinary sediment on admission and only a few on subsequent days. The urine had a pH of 5.6. A specimen was tested for the presence of formic acid by a gallic acid method before and after reduction of portions of the distillate to formaldehyde. Formic acid was found to be present in high concentrations.

The patient worked at a plant engaged in the reconditioning of metal drums. He had drained off liquid from the bottom of a returned drum, thinking it to be grain alcohol. The drum was found to have contained a lacquer thinner composed of "hydrocarbons 50%, mixed alcohols 25%, and butanes or esters 25%." Three other men also had drunk some of the adulterated wine.

¹ Coler, H. R., and Rossmiller, H. R. Tetrachloroethylene Exposure in a Small Industry. *A.M.A. Arch. Indust. Hyg.* 8:227 (Sept.) 1953.

One of these, the patient in case 6 was admitted to the hospital at the same time with loss of vision and acidosis and the other two were said to have had nausea and vomiting. The patient admitted that it was common practice for employees to drink material from returned drums although this was in violation of company rules. He was discharged improved except for loss of vision, on the ninth hospital day. Three months later he still could barely perceive movement in bright light, and both optic disks were markedly atrophied.

CASE 6—A Negro janitor, aged 30 when brought to Cincinnati General Hospital was acutely ill, with impaired vision of two days duration. On the previous Saturday and Sunday he had drunk large amounts of the lacquer thinner described in case 5. The onset of symptoms occurred with severe headache on Monday afternoon. A few hours later he began to vomit. He became mentally confused, restless, and then disoriented. There was progressive dimming of vision on Monday night and Tuesday. On admission to the hospital Wednesday morning he was unable to perceive light. The conjunctivas were slightly injected. The pupils were widely and equally dilated and did not react to light. On funduscopic examination there was slight edema of the retinas at the periphery of both optic disks and maculas. The carbon dioxide capacity of the plasma was 20.8 vol % the concentration of chlorides was 508 mg per 100 cc, and the blood had a pH of 7.28. The results of tests of liver function were within normal limits. The hemogram was normal. The urine had a pH of 6, and a trace of albumin was found. There were no casts in the sediment and no reducing substances by the Benedict test. Sodium bicarbonate was administered intravenously over a period of 12 hours with considerable clinical improvement. By the third hospital day the patient was fully oriented. There was no light perception by the right eye and only slight perception by the left. The right pupil was fixed, and the left reacted sluggishly to light. He was unable to converge. The fundi were unchanged. An electrocardiogram on the fourth hospital day had a T wave of low voltage in leads 1 and 2 with inversion of the T wave in leads 3, V₁, V₂, interpreted as indicating nonspecific myocardial damage. A needle biopsy of the liver was taken on the sixth hospital day, nine days after ingestion of the alcohol. This was reported as showing a few foci of nonspecific liver cell necrosis. The patient was discharged on the ninth hospital day. On examination five weeks later his vision was 5/200 in each eye. He was barely able to find his way through doors and to avoid large objects. There was now pronounced optic atrophy with deep cupping of both disks.

CASE 7—A Negro laborer aged 53, was brought to the Cincinnati General Hospital receiving ward because of the sudden onset of loss of vision. He stated that he had been in good health until the day before, when he had nausea, fever, chills, weakness, lightheadedness, excessive thirst and mild shortness of breath on exertion. On waking the following morning he was unable to perceive light with the left eye and only partially with the right. While the other symptoms improved during the next 48 hours he gradually lost remaining vision in the right eye. He was admitted to the hospital for study eight days after the onset of symptoms. He was now able to perceive light for the first time in four days. The pupils were equal, markedly dilated and did not react to light or accommodation. The ocular fundi were of normal appearance.

The patient at first denied the ingestion of methanol or any other unusual substance but stated that he often drank whisky over week ends, ordinarily "X" brand and had last had a drink two days before the onset of symptoms. He had been employed for 15 years in the operation of a wash tank in which used metal drums were dipped in sodium hydroxide as a first step in reconditioning. The drums were received from local industrial plants and usually had contained some chemical compound. Eight other men engaged in the same work apparently were in good health. The manager reported that while it was strictly against plant rules it was common practice for workmen to drain the residuum from drums that had an alcoholic odor. The patient was first observed to do this one month before the onset of illness when he filled a bottle from a drum and drank a portion of it. Near this man's work station at the plant an empty whisky bottle labeled "X" brand was found.

Over a period of 12 months there was gradual improvement of visual acuity to maximum uncorrected vision of 20/70 right eye and 4/200 left eye with residual evidence of optic atrophy more marked on the left side.

Methanol poisoning arising out of industrial exposure is secondary in importance to that due to ingestion of adulterated liquors. A few validated cases of poisoning of workmen following the inhalation of the vapor of methanol or absorption of the liquid through the skin have been reported. Even some of these bear the suspicion that the solvent may have been ingested as well. The chief danger of its use in industry still is the temptation to drink it. The cases described here, while not compensable as being due to occupational disease or injury, might have been prevented by closer control of solvent handling. The two unrelated episodes of typical methanol poisoning with blindness in men engaged in the reconditioning of metal drums have led me to regard the disorder as an unusual risk of this occupation, related to the temptation to drink from chemical containers that have the odor of alcohol. In all cases of Monday morning blindness Saturday night drinking habits should be considered and industrial sources of methanol investigated.

SUMMARY

There is danger in the handling of all solvents although fire and explosion are feared more commonly than are hazards to health. The selection of a solvent for a specific industrial use is a compromise between technological requirements and considerations of safety. Significant absorption of organic solvents by workmen may occur as a result of either one of two errors: the acceptance of inexcusably careless handling of compounds of relatively low toxicity or the provision of inadequate control measures in dealing with more toxic ones. Instances of pulmonary edema following exposure to methylene chloride and of acute hepatitis in a man exposed to tetrachloroethylene are described as examples of the first type of error. The second is illustrated by the report of cases of illness due to exposure to the vapor of carbon tetrachloride and blindness from the ingestion of methanol obtained at work.

Eden and Bethesda Aves (19)

The Biological Approach to Immunity—In a world that is full of microorganisms capable of infecting living tissues it is a positive necessity for survival that most experiences of infection by any given microbe should be followed first by recovery and secondly by a persisting insusceptibility to an attack of the same disease.

Perhaps the important factor in the development of the particular types of immune reaction with which we are familiar in man was the evolution of his mammalian ancestors for the most part as relatively solitary arboreal animals in tropical jungles. In such environments it seems likely that the major type of pathogen that would be encountered would be those protozoa and viruses spread by insect—especially mosquito—vectors. It is not improbable that the type of immunity characteristic of human being is essentially something evolved to deal effectively with infection by mosquito-borne viruses of the yellow fever type.

At least we can be sure that immunity is a mechanism that has been evolved to deal with the entry of foreign microorganisms into the body and that it has been perfected by the normal process of selective survival.—Sir Macfarlane Burnet, M.D., *The Newer Approach to Immunity in Its Bearing on Medicine and Biology*, *British Medical Journal*, July 24, 1954.

two occasions when he had worked briefly near a tetrachloroethylene system he had experienced nausea immediately on detecting the faint odor of the solvent

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⁴ Coler, H. R. and Rossmiller, H. R. Tetrachloroethylene Exposure in a Small Industry, *J. A. M. A. Arch. Indust. Hyg.* 8:227 (Sept.) 1953.

The table shows that all the patients reacted strongly to the self-curing and regular monomers. They also reacted to the disk made with the self-curing material. They did not react to the polymer, the disk made with the heated material, or the Luxene bar.

Results of Patch Testing of Patients with Allergic Sensitivity to Acrylic Monomer

	Case 1	Case 2	Case 3	Case 4
Self-curing monomer	3+	3+	3+	3+
Regular monomer	3+	3+	3+	3+
Polymer powder	Neg	Neg	Neg	Neg
Heat-cured disk	Neg	Neg	Neg	Neg
Self-cured disk	2+	2+	2+	2+
Luxene bar	Neg	Neg	Neg	Neg
Heat-cured acrylic dental plate	N	N	N	N

3+ = erythema, edema, and vesiculation
 2+ = erythema and edema
 Neg = no reaction
 N = nonspecific pressure effects, redness and swelling at maximum points of pressure

The only reactions obtained were with the self-curing and regular monomer. Patch tests with the polymer, i.e., polymethyl methacrylate, were negative. With the heat-cured disk polymerization was apparently complete, and there was no residual monomer left to give a reaction. With the self-cured disk, on the other hand, there was sufficient monomer left unpolymerized to produce a definite eczematous reaction on patch testing. The Luxene bar, which is vinyl plate, in which acrylic monomer is used as a plasticizer, likewise showed no reaction, indicating that here also the acrylic monomer was completely polymerized. The redness and slight swelling that I found on the removal of the entire dental plate I interpreted to be due to simple pressure effects. It should also be noted that the patient reported on in case 3 was able to wear an upper and lower acrylic dental plate without any symptoms, and that the patient in case 4 could tolerate a partial denture of acrylic material. This tends to show that persons who are very sensitive to the liquid acrylic monomer nevertheless tolerate heat-cured acrylic dental plates in which the liquid monomer has been completely polymerized.

SORE MOUTH DUE TO DENTURES

The term "sore mouth due to dentures"⁴⁶ is applied to any pathological change of the oral mucosa due to dental plates, whether the cause is allergic, traumatic, or toxic. If the cause is allergic, the term "stomatitis venenata" is used by some authors. The patient may complain of a burning sensation, soreness, dryness, or excessive salivation. Examination of the oral mucosa may show punctate or diffuse redness with or without erosions. At times the mucosa looks normal, yet the patient complains of a sore mouth when wearing the denture. On the other hand a routine examination may show a deep red imprint of the denture, but the wearer has no complaints.

I studied 20 patients who wore acrylic dentures and had sore mouth due to dentures. Their symptoms had been present for three months to two years. All the patients were women. I have been unable to explain the reason for the absence of male patients in this series. Four of these patients had been informed, either in our clinic or elsewhere, that they were allergic to their acrylic dentures and they had been advised to change to another type of denture.

The diagnosis, in large part, had been based on an alleged positive patch test obtained after the denture had been strapped to the forearm for 48 hours. I was fortunate to be able to contact the four patients, retest them, and reappraise the diagnosis of allergy to their acrylic dentures. The case histories of the four patients labeled as being allergic to their acrylic dentures are briefly presented below.

CASE 5—A 70-year-old woman had had burning and soreness in the mouth soon after acquiring a complete set of acrylic dentures. Examination had showed a diffuse redness of the hard palate with a few scattered punctate erosions. A patch test performed by strapping the entire denture to the patient's forearm for 48 hours had resulted in a fine vesicular eruption under the denture. The patient had been informed that she was allergic to acrylic dentures and she had been advised to change to rubber plates. Wearing a rubber denture had not ameliorated her symptoms. Finally, on the advice of another dentist, a new, well-fitting acrylic plate had been made that the patient now wears without any symptoms. This new upper acrylic plate was strapped to her forearm for 48 hours. Redness, papules, and vesicles appeared at the points of pressure of this new acrylic plate, which was causing no oral symptoms (fig. 1). Indeed, I was able to reproduce these nonspecific pressure effects by strapping a jar cover made of tin on her forearm for 48 hours. After histological examination of one of these vesicles, it was reported as a subepidermal bulla. Patch testing with the acrylic monomer showed negative results.

This patient, then, who had been informed that she was allergic to acrylic dentures because of a positive reaction of redness and vesiculation caused by strapping an acrylic denture on her forearm for 48 hours, had no difficulty in wearing properly fitting acrylic dentures.

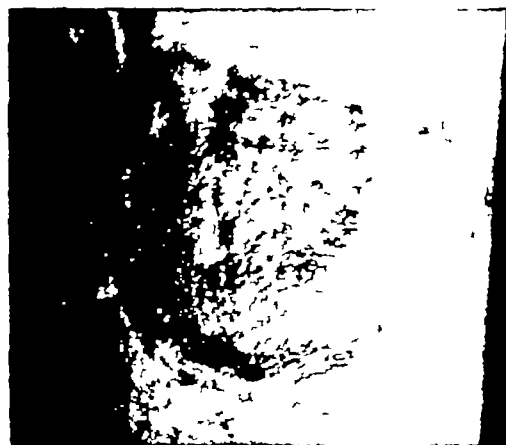


Fig. 1—Photographs showing result of strapping an acrylic denture to the forearm of the patient reported on in case 5 for 48 hours. Evidence of a nonspecific pressure effect, not of allergic sensitization, is seen.

The rubber dentures and her first set of acrylic dentures, according to her dentist, had been ill-fitting, and the oral symptoms were caused by trauma.

CASE 6—A 65-year-old woman had been informed that she was allergic to acrylic denture material on the basis of a positive patch test to her denture. At the time of examination she was using a rubber denture and her symptoms of burning and soreness in the mouth continued. Even when the dentures were not used the symptoms were not much improved. Patch testing by applying a rubber plate on the left arm and an acrylic plate on the right arm for 48 hours resulted in redness and papules at the site of maximum pressure on both arms. Patch tests with acrylic monomer and several types of rubber showed negative results. This patient has a moderately severe anemia, and there is a possibility that the symptoms are caused by the anemia.

CASE 7—A 50-year-old woman had been suffering from sore mouth due to dentures for three years. For many years she also has had recurrent aphthae of the oral mucosa. Three years ago, after she acquired a new set of acrylic dentures, her mouth became very sore. The acrylic plates were then relined with the self-curing material. Immediately the mouth symptoms became worse. She then changed to rubber dentures with some improvement; however, the aphthae and burning sensation in the mouth continued. Recently, because she did not like the appearance and feel of the rubber dentures, she changed to a new set of acrylic dentures which she is now wearing without any difficulty except for the aphthae. Patch tests with the acrylic monomer elicited a strongly positive reaction. A patch test with the acrylic denture showed some redness and papulation at the point of pressure. A patch test with the heat-cured acrylic disk was negative. Patch testing with the self-curing disk showed a true eczematous positive patch test characterized by redness, swelling and fine vesiculation. Patch tests with several rubber materials gave negative reactions.

In retrospect, I feel that the patient was not allergic to her original acrylic plates. They apparently did not fit well. The relining material used to remedy the ill-

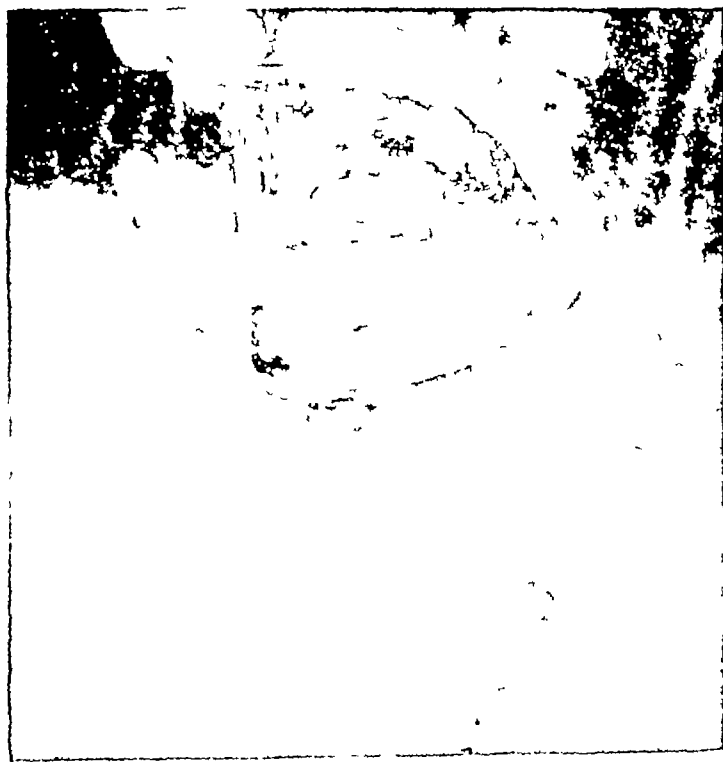


Fig 2.—Photograph showing bullous reaction to testing with an acrylic plate in the patient reported on in case 8. The reaction is caused by a nonspecific pressure effect.

fitting dentures apparently had enough unpolymerized monomer to cause an acute stomatitis venenata. A positive patch test to the liquid monomer showed that the patient had allergic sensitivity to this substance, however she can now wear, without difficulty, well-fitting acrylic dentures in which the monomer is completely polymerized. This is further borne out by the negative patch test to the heat-cured acrylic disk, while a positive reaction is obtained by testing with the self-curing disk, which has enough residual monomer to cause a positive reaction.

CASE 8—A 53-year-old woman, in 1951, had burning of the mouth and glossitis of two years' duration. Examination of the oral mucosa had showed slight diffuse redness. Patch testing at that time with her entire upper denture was said to have been positive, and she was told to change her plates, however, she could not afford to get new plates and continued to wear the old ones. One year later, after a cholecystectomy, all the

oral symptoms disappeared in spite of the fact she was wearing her original acrylic plates. Patch testing to the monomer and acrylic disk was negative. Strapping her denture on her forearm for 48 hours resulted in redness and papulation and a few large bullae (fig 2). These bullae I interpret as being caused by a nonspecific pressure effect. Furthermore, these bullae could be reproduced by use of a rubber denture. Histological examination showed a subepidermal bulla.

In addition to these 4 patients, 16 additional patients who had sore mouth due to dentures were studied. Each patient was patch tested to the following materials: (1) acrylic monomer, (2) the powdered polymer, (3) the heat-cured acrylic disk, and (4) the self-cured acrylic disk. All these tests were negative for a true allergic eczematous reaction. In very hot weather most of the patients showed a nonspecific follicular, prickly-heat-like eruption on removal of the disks. In addition each patient had her upper denture strapped to her forearm for 48 hours. There were no true reactions of allergic sensitization. All the reactions noted I interpreted as being due to nonspecific pressure effects. Where bullae formed and were studied histologically, the report was subepidermal bullae without any eczematous reaction.

In order to ascertain whether the liquid monomer was a primary irritant, 100 consecutive patients were patch tested with this material. These were patients seen in the allergy section who did not wear dentures but were being tested for other conditions. In only one of these patients was there a slight erythema after 48 hours. I did not retest with the monomer to see how many patients I could sensitize.

In addition I strapped an entire upper acrylic denture for 48 hours on the forearms of 20 men and 50 women control patients who did not have any mouth symptoms. In 2 men and 12 women, small bullae formed under the plates. In all cases there was some degree of redness and papulation on removal of the dentures; there was more in the women than in the men. Histological examination of the lesions showed subepidermal bullae. There was no apparent eczematous change. I therefore interpreted these bullae as being caused by simple pressure effects and not by allergic sensitizations. Furthermore, in no case did the erythema, papules, vesicles, or bullae spread beyond the points of maximum pressure, as often happens in true allergic eczematous reactions.

COMMENT

In this series of 20 patients with sore mouth caused by dentures, no patient was allergic to the completely polymerized acrylic denture. In this group there was one case of allergic hypersensitivity to the acrylic monomer. However, this patient could wear her acrylic dentures providing no unpolymerized monomer was present in the relining material. This agrees in the main with the finding of Nyquist⁴⁰ who could find no case of allergic reaction in 248 patients with sore mouth caused by dentures.

I must emphasize at this point that the clearing of a stomatitis when a denture is not worn and the prompt recurrence of a sore mouth with the use of the plate is no proof of allergic sensitization to the denture. Pressure and trauma of an ill-fitting plate may result in the same symptom complex.

Rattner⁴⁰ reported three cases of stomatitis venenata that he attributed to the wearing of plastic cellulose dentures. He was among the first to employ the method of testing the dental plates by strapping the entire denture on the patient's forearm and leaving it in place for 24 to 48 hours. Bradford⁴⁸ described an unusual case of stomatitis with a generalized erythematous eruption that appeared soon after the patient acquired a new set of acrylic plates. After the eruption had subsided, a skin test was carried out by strapping the denture to the forearm. Within 48 hours, a rash appeared at the point of contact of the acrylic plate and the skin.

Most of the authors already mentioned discuss allergic reactions to acrylic dentures. The consensus is that while such allergic sensitization possibly does exist, the incidence is very low. All these authors indicate that patch testing with the entire plate or with scrapings from the plate is the proper method for detecting such allergy.

Beall and Caul⁴⁹ reported reactions to the self-curing acrylic resins used for lining dentures. By means of a questionnaire, they learned that 88% of the dentists reported that their patients complained of a burning sensation after the use of a relined denture. The discomfort lasted a few hours to a day or so. There was no indication of allergic sensitization to this material in this report, since the patients continued to use the relined plates without difficulty after the initial burning sensation.

Vickers⁴¹ reported seven cases of angular fissure formation with some degree of stomatitis that were presumably caused by sensitization to dentures. Scrapings from the suspected dentures were applied for 48 hours, and there was no difficulty in reading the results. Some of these patients apparently wore acrylic dentures, others wore rubber dentures. Stoy,⁴² however, patch tested all patients with suspected angular stomatitis but reported that he had obtained no obvious positive patch tests and could not prove that any of his cases of angular stomatitis were due to sensitivity to the acrylic dentures. I similarly studied eight patients with perleche (angular stomatitis), and in none could I prove that the acrylic dentures were the cause of the angular stomatitis. In four patients who did not wear the dentures for two weeks, the angular stomatitis remained unimproved. In all eight patients there was no evidence of allergic sensitization by patch testing to the acrylic monomer.

Nyquist,⁴³ in his recent treatise on sore mouth caused by dentures, found that patch testing with grindings or scrapings from the suspected dentures incurred the least risk of mechanical lesions of the skin. He admits that testing with the entire denture or pieces of the denture might give false reactions in the form of erythema of the patch test site, which could be confused with a true allergic reaction.

I also believe that patch testing by strapping the entire plate to the forearm may lead to many diagnostic errors, since redness, papulation, vesiculation and even bulla formation may result from nonspecific pressure effects. To the uninitiated, such findings may be easily confused with a true allergic reaction. Furthermore, there seems to be no necessity for testing with an entire plate or even with grindings from the denture because the completely

polymerized resin is allergenically inert. My results show that patch testing with the liquid monomer alone is sufficient to indicate the presence or absence of allergic sensitization to acrylic denture material. The polymer and the heat-cured plate have not been shown to be sensitizers.

Persons who are highly sensitive to the monomer may nevertheless wear acrylic dental plates, providing the monomer has been completely polymerized. Speelman and his co-workers⁴¹ similarly showed that 10 experimental subjects, whom they had sensitized to the monomeric methyl methacrylate, were not allergic to the completely polymerized product (in this case Plexiglas), in spite of the fact that the finished product was made with the monomer.

In those cases in which it is suspected that relining or repair material made with self-curing dental resin is causing symptoms, patch testing with the liquid monomer alone is again sufficient. The positive patch test with the liquid monomer would tend to confirm the implication that the relining material was at fault. A negative patch test to the liquid monomer would seem to rule out the role of allergic sensitization to either the heat-cured plate or the self-curing material.

I feel that there is apparently no necessity for testing the liquid monomer directly on the oral mucosa. Many workers, including Jadassohn⁵ and Sulzberger,⁶ have shown that the oral mucosa may be the site of allergic reactions analogous to the allergic eczematous contact reaction of the skin. Goldman and Goldman⁷ showed, by direct oral mucosal contact testing, the close similarity of the reaction of the skin and mucosa. These authors concluded that contact stomatitis is usually associated with contact cutaneous allergies, actual or potential. In my studies⁸ of the allergic contact type of reactions to toothpaste, I have found that the oral mucosa and the perioral skin and the skin of the extremities react similarly. The ingredients suspected clinically as causing the oral symptoms were revealed by positive patch test on the skin. While such a relationship is not invariable, patch testing of the skin can usually be relied on to indicate sensitivity of the oral mucosa as well.

SUMMARY

Four patients were studied who had an allergic contact type of dermatitis of the hands that was proved clinically and by patch testing to be due to allergic sensitivity to the liquid monomer (methyl methacrylate). These patients were not allergic to the polymethyl methacrylate powder or to the heat-cured denture material. Two of these patients could wear acrylic dentures in spite of the fact that they were sensitive to the monomer. They were also sensitive on patch testing to denture ma-

5 Jadassohn, J. Bemerkungen zur Sensibilisierung und Desensibilisierung bei den Ekzemen im Anschluss an einen Fall von Odolekzem. *Klin. Wchnschr.* 2: 1650, 1923.

6 Sulzberger, M. B., and Goodman, J. Acquired Specific Hypersensitivity to Simple Chemicals. Cheilitis with Special Reference to Sensitivity to Lipstick. *Arch. Dermat. & Syph.* 37: 497 (April) 1938.

7 Goldman, L., and Goldman, B. Contact Testing of the Buccal Mucous Membrane for Stomatitis Venenata. *Arch. Dermat. & Syph.* 50: 79 (Aug.) 1944.

8 Fisher, A. A., and Lipson, M. Allergic Stomatitis Due to "Bakelite" in Dentifrice. *A. M. A. Arch. Dermat. & Syph.* 64: 6-9 (Nov.) 1951. Fisher, A. A., and Tobin, L. Sensitivity to Compound G-4 ("Dichlorophene") in Dentifrices. *J. A. M. A.* 151: 99 (March 21) 1952.

terial made with the self-curing monomer, showing that with this material there is sufficient unpolymerized monomer that can produce reactions

Twenty cases of sore mouth caused by dentures were studied. Four of these patients had been told that they were allergic to their acrylic dentures because of positive reactions obtained by strapping their plates on the forearm for 48 hours. Three patients changed to another type of denture without relief. One of the patients was found to be allergic to the monomer but could wear a heat-cured acrylic denture without difficulty. In none of the cases could I prove that allergic sensitivity to acrylic denture material played a role in sore mouth caused by dentures. Seventy controls, 20 men and 50 women, had dentures strapped on their forearms. In 48 hours all reacted with some degree of redness and papulation. In 2 men and 15 women, small bullae formed at points of maximum pressure. Histological examination showed subepidermal bullae without eczematous response.

CONCLUSIONS

Methyl methacrylate liquid monomer is a sensitizer and can cause an allergic contact type of eczematous reaction on the skin and the oral mucosa. When it is completely polymerized, it is no longer a sensitizer or elicitor of allergic reactions. No instance of allergic sensitization to heat-cured acrylic denture material was found in 20 patients with sore mouth caused by dentures. Self-cured acrylic denture material has sufficient unpolymerized monomer to give reactions in patients sensitized to the monomer.

Testing for allergic sensitization to acrylic denture material by using the entire denture or with grindings or scrapings of the denture is unnecessary, since testing with the monomer alone will indicate the presence or absence of allergic sensitization to the denture material. The polymer and the completely polymerized material apparently are not sensitizers. Many persons will react to the strapping on for 48 hours of any type of denture on their forearm with redness, papulation, and even bullae formation. This appears to be a nonspecific pressure effect, since histological examination of these bullae showed simple subepidermal bullae without any eczematous reactions.

45-14 48th St

Urinary Infection—The preferred agents for the initial treatment of urinary infection of all varieties should be one of the sulfonamide drugs. These drugs have several advantages over the antibiotics as follows: 1. They are effective against a greater variety of organisms. 2. They are attended by fewer unpleasant side effects than most of the antibiotics, especially those administered orally. We have encountered only 11 instances of drug sensitivity to sulfonamides, 8 to sulfadiazine, and one each to Terfonyl, Gantrisin, and Sulfathalidine. All but one of these reactions were mild, consisting of skin rash, slight diarrhea, or slight nausea and vomiting. One patient who had taken sulfadiazine successfully several times before eventually developed a febrile reaction to the drug. 3. An antibiotic is likely to be entirely ineffective if used before the culture is reported. Each of the antibiotics is completely ineffective against some of the organisms that cause urinary infection. 4. The sulfonamides are cheaper.—H. S. Everett, M.D., and J. H. Long, M.D., *The Treatment of Urinary Infections, American Journal of Obstetrics and Gynecology* 954

CLINICAL NOTES

PITUITARY BASOPHILISM IN THE JUVENILE TYPE OF ACANTHOSIS NIGRICANS

Stephen Rothman, M.D., Chicago

Acanthosis nigricans is characterized by the formation of hyperpigmented, velvety plaques that occur mainly on the lateral aspects and nape of the neck and in the axillae and groins. Microscopically, these plaques show papillary hypertrophy, waviness of the surface, thickening of the epidermis, hyperkeratosis, and hyperproduction of melanin pigment. Around the plaques of *acanthosis nigricans* single, nonpigmented papilloepitheliomas, pendulous fibromas, and verruciform excrescences are often seen. Two distinct types of *acanthosis nigricans* are recognized. In the first (malignant or adult) type, malignant tumors of internal organs can invariably be found. In the second (juvenile or benign) type the plaques appear at an early age, and no malignant lesion is demonstrable. Interestingly, however, in two reported cases¹ one parent of each patient died early from bronchogenic carcinoma. Patients with *acanthosis nigricans* of the benign or juvenile type are usually excessively obese. Some of the patients have glycosuria at irregular intervals,^{1b} some show a delayed type of glucose tolerance curve,² some have exertional hypertension, some show a tendency to stria formation,³ and some have severe acne.⁴ As early as 1925 the idea was advanced⁵ that in both types of the disease growth-promoting substances in the blood might cause papillary hypertrophy in the skin. These substances, it was thought, may derive from the neoplasm in the adult type and from the hormonal imbalance in the juvenile type. In the last 10 years the possible pituitary origin in the juvenile type was discussed several times in the Chicago Dermatological Society⁶; it was pointed out that although the clinical picture resembles pituitary basophilism (Cushing's syndrome) many of its features, particularly electrolyte shifts, are lacking in obese persons with *acanthosis nigricans* and that in this disease endocrine disturbances cannot be definitely shown clinically or by laboratory methods.

From the Section of Dermatology, Department of Medicine, University of Chicago.

Read before the Seventy-Fourth Annual Meeting of the American Dermatological Association, White Sulphur Springs, W. Va., April 14, 1954.

Discussion of this presentation will appear in the author's reprints: 1. (a) Brünauer, *Acanthosis nigricans*, Benign, juvenile Type, *Zentralbl. Haut- u. Geschlechtskr.* 37: 786-787, 1931. (b) Curtis, A. C., in discussion on Rothman, S., and Henningsen, A. B., *Acanthosis nigricans* of the Juvenile Type, Mild Diabetes and Obesity, *Arch. Dermat. & Syph.* 48: 468-469 (Oct.) 1943.

2. Miescher, G., *Zwei Fälle von kongenitaler familiärer Acanthosis nigricans kombiniert mit Diabetes mellitus*, *Dermatol. Zeitschr.* 32: 276-305, 1921. *Jadassohn, W., Familiäre Acanthosis nigricans kombiniert mit Fettsucht*, *Arch. Dermat. u. Syph.* 150: 110-114, 1926. Rothman and Henningsen.^{1b}

3. Rothman, S., in discussion on Omens, D. V., and Omens, H. D., *Acanthosis nigricans* (Juvenile Type), *Arch. Dermat. & Syph.* 53: 194 (Feb.) 1946.

4. Binkley, G. W., and Barr, J. H., *Acanthosis nigricans*, Benign Type with Acne and Active Duodenal Ulcer, *Arch. Dermat. & Syph.* 53: 69-70 (Jan.) 1946.

5. Rothman, S., *Über Hauterscheinungen bei bösartigen Geschwülsten innerer Organe*, *Arch. Dermat. u. Syph.* 149: 99-123, 1925.

6. Rothman, S., and Shapiro, A. L., *Acanthosis nigricans*, Juvenile Type, *Arch. Dermat. & Syph.* 52: 59 (July) 1945. Rothman, S., in discussion on Spencer, H., *Acanthosis nigricans*, Probably Juvenile Type, *ibid.* 63: 810 (June) 1951. Rothman and Henningsen.^{1b} Rothman.¹

REPORT OF A CASE

A 41-year old business executive was first admitted to the Albert Merritt Billings Hospital in March, 1945, because of obesity, dyspnea, orthopnea, some swelling of legs, insomnia, and frequency of urination. On admission he weighed 345 lb (155.5 kg). He stated that he had been underweight up to the

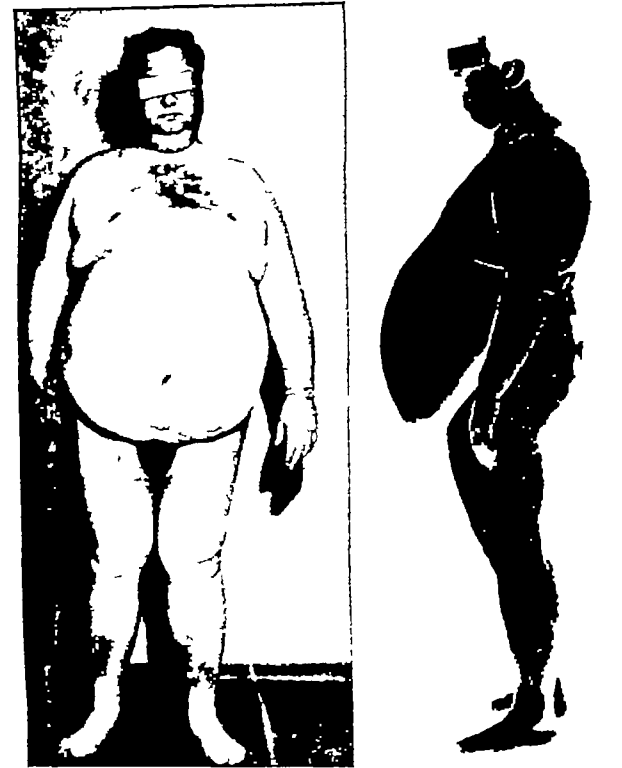


Fig 1—Clinical appearance of the patient.

age of 7. In the next years he had become "rather plump," but thereafter, engaging in athletics he had become thin again. At the age of 18 he had weighed 175 lb (79.4 kg), at this time he was found to have tachycardia and was told to refrain from athletics. From then on he had gradually gained weight, 5 to 10 lb (2.3 to 4.5 kg) per year. In the last two years, however, he had gained 60 lb (27.2 kg). He had always been able to lose weight by rigorous dieting. According to the referring psychiatrist's information, the patient had been impotent for several years. Family history revealed obesity of the patient's



Fig 2—Lesions of acanthosis nigricans on the medial aspects of thighs

mother and one maternal aunt. On physical examination, this excessively obese man (fig 1) was found to breathe with slight difficulty when lying in bed. The heart was slightly enlarged, otherwise chest and abdominal organs were found to be normal. External genitalia were small. Many cutaneous papillomas and cutaneous tags were seen on the eyelids, on the nape of the neck, in the axillae, around the navel, and in the groins. Pigmented areas with papillary hypertrophy were present on the

nape of neck, in both axillae, and on the medial aspects of the thighs (fig 2). In dermatological consultation the diagnosis of acanthosis nigricans, juvenile type, was made, and this diagnosis was confirmed by histological examination of a biopsy specimen of the skin (fig 3). It was stated that this cutaneous syndrome might be of pituitary origin. An electrocardiogram revealed slight myocardial abnormality. The basal metabolic rate was +1%. Roentgen examinations showed a normal chest and normal sella. The urine contained small traces of albumin but no cells. The hemoglobin level was 16 gm per 100 cc, erythrocyte count 5,400,000 and leukocyte count 9,500 per cubic

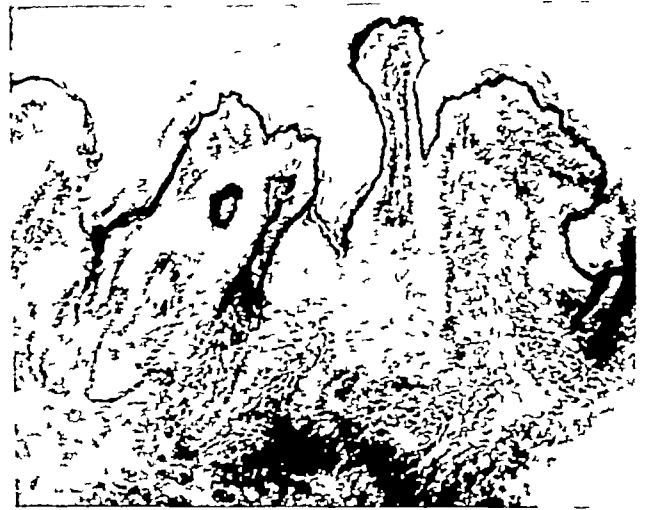


Fig 3—Photomicrograph of section of skin from an acanthosis nigricans lesion (silver stain)

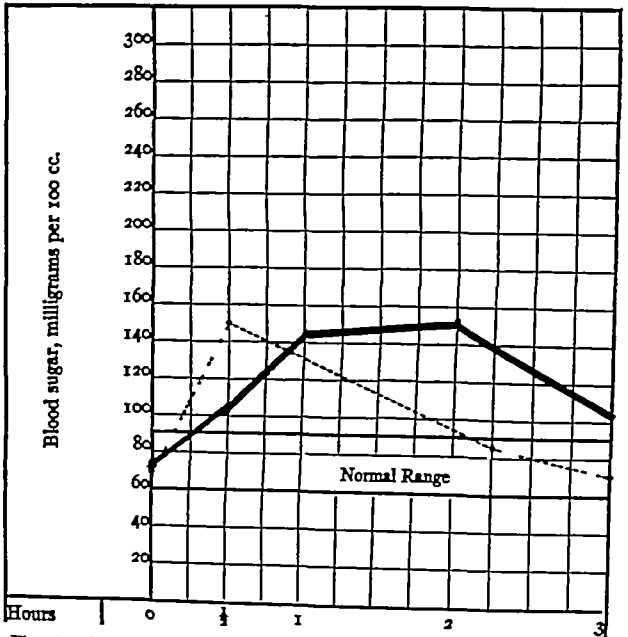


Fig 4—Glucose tolerance test of the patient (heavy line) compared with normal glucose tolerance test (broken line)

millimeter, and differential count normal. Total protein level and albumin-globulin ratio were normal. Fasting blood sugar was 73 mg. per 100 cc. The glucose tolerance showed delayed rise and delayed fall (fasting value 73, one-half hour value 105, one hour value 142, one hour value 152, and three hour value 102 mg per 100 cc). Tests of the urine showed absence of sugar throughout the test (fig 4). Ophthalmologic examination revealed slight sclerosis of retinal vessels.

In the years from 1945 to 1953 the patient was admitted to the hospital eight times. On each of these occasions he received diets ranging from 600 calories per day to pure starvation (black

coffee and cigarettes) he lost considerable weight (for instance, 15 kg in six to seven weeks) and had some relief of symptoms, but on returning home he soon regained his original weight and continued to gain more weight. The endocrinology service could find no endocrine disturbance either by clinical or by laboratory examinations. Neurological examination also was normal. According to the testimony of family members the patient when at home, was unable to keep to any diet but raided the icebox at night quite regularly. The conclusion was arrived at that the obesity was caused by psychogenic overeating. Psychiatric interviews strongly supported this opinion. From this point of view the patient's case will be reported on later by the gastroenterology service of the hospital.

The final admission of the patient was in April, 1953, when he entered disoriented, drowsy, and cyanotic after a severe coughing episode. He had increasingly severe respiratory distress and pulmonary edema and died the next day. On autopsy the main finding was basophilism of the pituitary gland, considerably more than half of the cells being basophilic. The section of the pituitary gland shown in figure 5 was stained with



Fig 5—Photomicrograph of section of pituitary gland of patient with acanthosis nigricans, showing pituitary basophilism. Dark cells are basophils (aldehyde fuchsin stain of Gomori) ($\times 240$).

Gomori's aldehyde-fuchsin-trichrome combination.⁷ Sections stained with periodic acid-Schiff stain and with hematoxylin-eosin have yielded similar pictures. The adrenal glands were normal in size and shape, and there was no hypertrophy of the cortex.

COMMENT

As far as I have been able to establish, this is the first case of acanthosis nigricans, juvenile type, in which there has been a postmortem examination of the pituitary gland. Possibly in other cases of this disease a similar abnormal state of the pituitary gland is present. It is suggested that basophilism may cause two distinguishable entities: first, classical Cushing's syndrome, and second, obesity with acanthosis nigricans, borderline disturbances of carbohydrate metabolism, and one or another incompletely developed feature of Cushing's syndrome. This separation is based on the facts that in patients with

classical Cushing's syndrome the occurrence of acanthosis nigricans has never been reported and that in patients with acanthosis nigricans the picture of Cushing's syndrome never fully develops.

SUMMARY

In a case of acanthosis nigricans of the benign, juvenile type, autopsy revealed diffuse basophilism of the pituitary gland. Patients with Cushing's syndrome and patients with the juvenile type of acanthosis nigricans have much in common, but the two conditions are clinically distinguishable entities.

7 Gomori, G. A Rapid One-Step Trichrome Stain. *Am J Clin. Path.* 20: 661-664, 1950. Aldehyde Fuchsin. A New Stain for Elastic Tissue. *ibid.* 20: 665-666, 1950.

ACTINOMYCOTIC DIVERTICULOMA OF THE SIGMOID COLON

Harry S. Hoffman, M.D., Atlantic City, N.J.

Actinomycosis in the sigmoid colon is rare, judging by the very few cases reported in the literature. The fact that correct diagnosis was not made preoperatively or during life in any of the recorded cases of colonic actinomycosis justifies special consideration of the disease. There are only six reported cases of primary actinomycosis of the sigmoid colon¹, in four of these, an actinomycotic mass was excised under the impression that it was a malignant mass.² The case presented here is of interest as the seventh report of this disease and the first reported instance of an actinomycotic diverticuloma.

REPORT OF A CASE

A 48-year-old white woman was admitted to the Hahnemann Hospital of Philadelphia complaining chiefly of intermittent colicky pain in the left lower quadrant of the abdomen of three years' duration, which had become much severer in the preceding two months. These attacks were associated with increasing constipation, attacks of diarrhea, and slight nausea. There had been no weight loss, vomiting, or blood or pus in the stools. The history revealed that during an appendectomy performed five years previously a diagnosis of diverticulosis of the colon had been established. Physical examination failed to reveal any palpable portion of the colon. No masses could be felt. There was some increase in tympany throughout the abdomen and occasional hyperperistaltic sounds. The liver and spleen could not be palpated. Rectal examination was normal. Sigmoidoscopic examination for a distance of 19 cm was normal, at this level a very sharp angulation was noted that was apparently fixed, although there was no evidence of mucosal ulceration. The sharp and fixed angulation prevented the passage of the sigmoidoscope beyond this point. A barium enema revealed a rapid flow from rectum to cecum with reflux into a normal-appearing terminal ileum. There were numerous diverticula of the distal half of the colon. The midsigmoid was narrowed and spastic. There was an extrinsic pressure defect of the lateral aspect of the midsigmoid, as though a rounded mass of about 3 cm diameter was pressed against the colon at that point. The pressure defect was persistent. A long, sharpened diverticulum without a rounded extremity extended into the extrinsic defect. There was no evidence of infiltration of the intestine wall around the defect. This area of the sigmoid, though persistently narrowed, was slightly distensible, it was very tender, its mucosal pattern was edematous and distorted but was not destroyed. After evacuation the

1 Cope, V. Z. Actinomycosis Involving the Colon and Rectum. *J Internat Coll Surgeons* 12: 401 (July-Aug.) 1949.
2 Cope, Z. Actinomycosis. London, England: Oxford University Press, 1938.

mucosal pattern appeared normal except for distortion in the area of diverticulitis. The patient was apparently in good health and well nourished. Her pulse rate was 78 per minute, respiratory rate 20 per minute, and temperature 98 F. Her abdominal wall showed an old appendiceal scar. A blood cell count showed 5 020 000 red blood cells per cubic millimeter and 7 100 white blood cells per cubic millimeter, with 65% polymorphonuclear cells, 31% lymphocytes, 1% eosinophils and 3% monocytes.



Fig. 1—Roentgenogram showing a pressure defect on the lateral wall of the sigmoid caused by an extrinsic mass. The diverticula of the sigmoid extend into the area of the mass.

The sedimentation rate was 25 mm per hour. The blood sugar level was 80 mg per 100 cc, blood urea nitrogen, 15 mg per 100 cc. Kahn and Wassermann tests and a Kolmer test of the spinal fluid were negative. The colloidal gold curve was normal. Spinal fluid culture was sterile after 72 hours. Urinalysis was normal. The stool showed no mucus, blood, ova, or parasites.

A preoperative diagnosis of diverticulitis of the colon with abscess formation and/or neoplasm was made, and a laparotomy was performed. With the patient under continuous spinal anesthesia a left rectus muscle splitting incision was made through which the diseased portion of sigmoid colon was freed and excised, bowel continuity was reestablished with an end-to-end anastomosis. The excised segment of sigmoid colon measured 8 cm in length by 4 cm in diameter. The wall was thickened to 5 mm, and several diverticula were noted within it. The mesentery was thickened by fibrosis. Microscopic examination of tissue from a diverticulum showed that the mucosa was ulcerated and infiltrated with acute giant inflammatory cells. The ulcerated area showed a very dense formation of fibrous tissue in its floor and walls and a cellular reaction involving lymphocytes, plasma cells and histiocytes. The lymphocytes tended to be arranged in small collections. Only an occasional polymorph was noted. Yeast like bodies were scattered throughout the lesion but were not related to the lymphoid collections; they seemed to be completely absent in some areas but fairly numerous in others. They stained a faint red with hematoxylin and eosin and with this stain were almost indistinguishable from the surrounding connective tissue. When stained by Mallory's eosin method for actinomycetes, however, they showed up clearly as homogeneous dark blue circular bodies, most of them 7 to 8 μ in diameter. Sections from several parts of the lesion all showed the same picture. The diagnosis was actinomycotic diverticuloma of the sigmoid colon. The

patient's course after operation was uneventful and she was discharged from the hospital on the 18th postoperative day. After the laboratory established the diagnosis the patient was questioned to ascertain the source of her infection. It was found that she had been in the woolen business for the preceding five years. Before associating herself with the woolen industry she had been in excellent health but soon afterward she noted the abdominal symptoms.

COMMENT

There are many varieties of actinomycetes, some aerobic and some anaerobic. The common type that grows on grasses and grains is seldom pathogenic. Fungal fungi, who are usually attacked by the anaerobic or microaerophilic form of actinomycetes. The aerobic form is frequently saprophytic and can easily be cultured. For the pathogenic variety is difficult to grow and is usually killed by drying. The common pathogenic species—*Actinomyces bovis* of Wolff-Israel—is often resident in cattle teeth but has never been found naturally growing outside the body. The commonest mode of entry of the fungus into the body is through the lining of the alimentary canal but the lungs, skin and possibly the female genital tract are occasional routes of entry. Actinomycotic lesions of the colon usually involve the muscular and serosal coats of the colon, leaving an intact mucosa. In



Fig. 2—Roentgenogram of the affected portion of the sigmoid. The mucosal pattern is distorted but not destroyed. A long diverticulum with a rounded extremity extends into the extrinsic mass.

the case reported, the external wall was extensively involved, the mucosa remained intact.

The evaluation of chemotherapeutic measures, particularly those using sulfonamide drugs and penicillin, is

difficult, and many years will probably elapse before an accurate appraisal can be made.⁴ Meleney⁵ in a review of this subject points out some of the important factors involved in this difficulty, which include duration of the illness, the extent and location of the infection, surgical procedures and treatment, mixtures of organisms, and the problem of local and general immunity. Despite the nonuniformity of these factors in cases reported, however, a survey of the literature leaves little doubt that a definite advance in therapy has been made with the addition of sulfonamide drugs and penicillin to the surgical armamentarium.⁶ This disease, which only a few years ago was reported as "uniformly fatal or nearly so," has been reduced to a condition that, although still serious, now offers considerable hope of recovery and good health to those affected.⁴

3302 Pacific Ave

4 Campbell D A, and Bradford, B, Jr. Actinomycosis of the Thorax and Abdomen. *Arch Surg* 57:202 (Aug) 1948

5 Meleney F L. The Difficulty of Evaluating Drug Treatment in Surgical Infections. *J A M A* 124:1021 (April 8) 1944

6 Wangenstein, O A. The Role of Surgery in the Treatment of Actinomycosis. *Ann Surg* 104:754 (Oct) 1936. Lyons, C, Owen, C R, and Ayers W B. Sulfonamide Therapy in Actinomycotic Infections. *Surgery* 14:99 (July) 1943. Walker, S M, and Hamilton, J W. The Treatment of Actinomycosis with Penicillin. *Ann Surg* 121:373 (March) 1945

POSSIBLE FACTOR IN SUDDEN AND UNEXPECTED DEATH DURING INFANCY

David M Spain, M D

Victoria A Bradess, M D

and

Irving J Greenblatt, Ph D, Brooklyn, N Y

It has been estimated that each year in the United States several thousand young infants in apparently good health die suddenly and unexpectedly. These deaths have been attributed by different observers to accidental mechanical suffocation, enlargement of the thymus, adrenal hormone imbalance, and various forms of infection such as interstitial pneumonitis or focal bronchopneumonia.¹ Only a diagnosis of infection, particularly that of the upper and lower respiratory tracts, appears to have any validity in the vast majority of these cases. However, careful investigation into the circumstances surrounding these cases and detailed gross and histological post-mortem examination have as yet failed to adequately explain the suddenness of these deaths as well as the absence of any significant symptoms. The usual history is that a healthy infant between 1½ and 3½ months of age has been put to bed in a crib or carriage and several hours later is found dead.

From the Department of Laboratories and the Messinger Research Laboratories of the Beth El Hospital, Brooklyn, and the Medical Examiner's Office of the Department of Laboratory and Research of Westchester County Valhalla, N Y

1 Abramson H. Accidental Mechanical Suffocation in Infants. *J Pediat* 25:404 1944. Werne, J. Post Mortem Evidence of Acute Infection in Unexpected Death in Infancy abstracted. *Am J Path* 18:759 1942

2 Moore, D H, DuPan, R M, and Buxton, C L. An Electrophoretic Study of Maternal Fetal, and Infant Sera. *Am J Obst & Gynec* 57:312, 1949

In the past four years, we have had the opportunity of studying 52 consecutive instances of sudden and unexplained deaths in infants of this age group. The only significant postmortem findings were those of occasional foci of inflammation, particularly in the upper and lower respiratory tract. Less frequently there were inflammatory foci in other sites. These areas of inflammation on occasion appeared similar to those seen in the histological response to infection produced experimentally in the nonimmune animal. There were occasional colonies of bacteria or areas of necrosis present in the lungs and other organs and only a sparse surrounding inflammatory response, in which mononuclear cells often predominated (fig 1). The peak incidence of these deaths was during the winter and early spring months. These are the months in which respiratory infections are most prevalent. Thirty-six of the 52 cases occurred during this period, while the remaining 16 occurred during the late spring and summer months. The age distribution (fig 2)



Fig 1—Photomicrograph (hematoxylin and eosin stain) showing area of necrosis with scant surrounding inflammatory reaction on the larynx of an infant who died suddenly and unexpectedly

reveals a peak incidence between 2 and 3 months. Only one case occurred in infants under 1 month and only two in infants over 5 months. Thirty-four cases occurred in male infants and 18 in female infants. These figures are in general agreement with those reported by others.

It is known that during the first few months of life an infant is dependent on the antibodies received during fetal life from its mother. These antibodies usually disappear by the second or third month, and the infant begins his own synthesis of antibodies. Although there is no direct parallel between antibody and serum gamma globulin levels, it has been demonstrated that the serum gamma globulin level is at a peak level at birth and declines rapidly to a low level at 2 and 3 months of age.² The age between 2 and 3 months, therefore, is a critical and transitional period in regard to the antibody and immune mechanisms of the infant. Because the period of most frequent incidence of deaths in these infants coincides with this period, because most of the cases occur during the time of the year when respiratory infections are prevalent, and because there are scattered foci of inflammation in the respiratory tract and in other sites that often resemble the response seen in a nonimmune animal, we decided to begin a study of the gamma glob-

ulin levels in the postmortem serum of the patients that came to our attention

The gamma globulin levels in the postmortem serums of five infants have been determined. Two infants served as controls. The first, 6 weeks old, died of proved accidental mechanical suffocation, and the second, 11 weeks

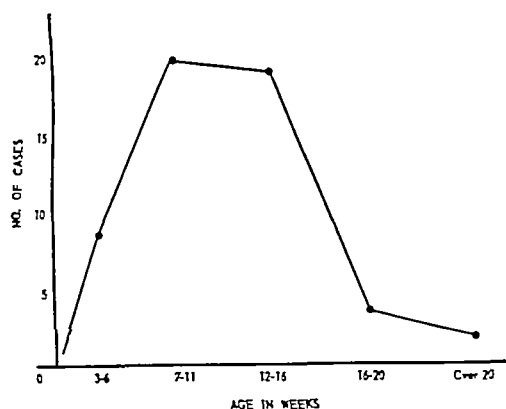


Fig. 2.—Age of infants in 52 instances of sudden, unexpected death.

old, died of hydrocephalus. Serum was obtained three and six hours after death, respectively, and the Longworth-Schlieren scanning method was used. In these two infants the gamma globulin levels were 600 mg per 100 cc and 590 mg per 100 cc respectively. These are normal determinations for this age period. The other three infants were 6, 9, and 5 weeks old and had been in apparently good health. All were put to bed and found several hours later dead in their cribs. There was no evidence of accidental mechanical suffocation. The infants were normal at birth and gained the usual amount of weight, and at the time of postmortem examination they were well developed and well nourished. The only significant findings at autopsy were some evidence of acute inflammation in the upper respiratory tract, as well as a few scant foci of inflammatory cells around the bronchioles. Serum was obtained within six hours after death, and the gamma globulin levels were 150 mg, 183 mg, and 180 mg per 100 cc respectively. These are regarded as definitely below normal even for this age period.

It is therefore possible that an important factor in the inability of these infants to respond to an infection in the usual way may be dependent on a deficiency in antibodies as well as gamma globulin. Although it is hazardous to speculate on the basis of the findings in a few cases, partial substantiation for this view is obtained from the reports of Bruton and of Janeway, Apt, and Gitlin on a condition described as agammaglobulinemia.³ They reported on several children who did not respond favorably to the antibiotic treatment of infections. It was found that these children had abnormally low serum gamma globulin levels. The infection cleared after injections of gamma globulin.

This report is presented so that others having access to similar cases of infant deaths will take steps to determine the serum gamma globulin levels. If the above-described finding and thesis should be substantiated, the routine injection of small amounts of gamma globulin in young infants might possibly prevent a substantial number of these sudden and unexpected deaths.

SUMMARY

In three infants who died suddenly and unexpectedly, postmortem serum gamma globulin determinations were made and found to be exceptionally low. Postmortem determinations in two control infants of the same age group showed normal gamma globulin levels. It is suggested that a lowered antibody level or gamma globulin level or both may be an important factor in many of these sudden and unexpected deaths occurring during infancy.

Linden Blvd and Rockaway Parkway (Dr Spain)

3 Bruton O. C. Agammaglobulinemia, *Pediatrics* 9:722, 1952.
Janeway C. A. Apt, L., and Gitlin D. Agammaglobulinemia, *Tr A Am. Physicians* 66:200, 1953.

NITROFURAZONE DERMATITIS FOLLOWING COITUS

Dr Chakko George, L R C P and S (Edinburgh)
London, England

Since the introduction of nitrofurazone, derivatives as bacteriostatic agents, many cases of cutaneous sensitivity reactions to this group of drugs have been reported in the literature.¹ Nitrofurazone (Furacin [5-nitro-2-furaldehyde semicarbazone]) is one member of this group that has been widely used during the last few years. The following case is reported as being of particular interest because of the rather unusual mode of accidental contact to the drug.

REPORT OF A CASE

A 32-year-old white man, a welder, was admitted to the University Hospitals, March 3, 1952, with the chief complaint of reddening, itching, and swelling of the scrotum and penis. Examination revealed fairly well demarcated areas of erythema confined to the inner thighs, the penis, scrotum, and pubis, the perianal areas, the lower flanks, and both hands in an otherwise healthy person. All the involved areas were edematous. Match-head-sized vesicles, red acuminate papules, and a few yellow-topped pustules were scattered over the afflicted areas (fig. 1). The penile skin was swollen to double its normal size and the entire coronal margin (the patient had been circumcised) was



Fig. 1—Areas afflicted with nitrofurazone dermatitis.

studded with hemispherical lentil-sized vesicles, some intact and others ruptured leaving raw denuded areas.

The patient's wife was convalescing from an operation for repair of the perineal floor and three days previously on medical

D. Harold N. Coe gave permission to reprint this case.
1. Hill, W. R., and Fink, W. E. Dermatitis From Nitrofurazone. *A. M. A. Arch. Dermat. & Syph.* 57: 111, 1958.
Richey, I. H., and Munk, J. A. C. *Sem. in Derm.* 1: 1, 1953.

ment With evidence of widespread or distant metastases, amputation should not be considered

In this presentation one notes the onset of pain in the right shoulder, relieved by aspirin. It was not until one year later that diagnostic attempts were made by x-ray and biopsy. The lapse of one year between the onset of symptoms and the establishment of a diagnosis precluded success with any form of treatment that would have been successful in this patient. It is doubtful that x-ray treatment should ever be used alone. In this patient it was of no value.

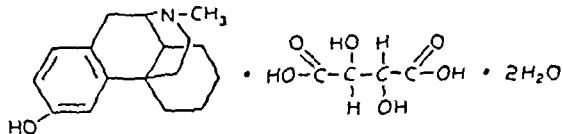
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., Secretary

Levorphanol Tartrate—Levo-Dromoran Tartrate (Hoffmann-La Roche)— $C_{17}H_{21}NO \cdot C_4H_6O_6 \cdot 2H_2O$ —M.W. 443.48—[3-Hydroxy-methylmorphinan tartrate dihydrate]—The structural formula levorphanol tartrate may be represented as follows:



Actions and Uses—Levorphanol tartrate, a potent, synthetic analgesic related chemically and pharmacologically to morphine, produces a similar intensity of analgesia in much smaller doses and seems to be somewhat longer-acting. Available experimental evidence indicates that the toxicity of levorphanol roughly parallels its analgesic activity. With corresponding analgesic doses, its margin of safety is approximately equal to that of morphine.

Levorphanol tartrate is useful for the relief of severe pain and may be employed for the management of intractable pain caused by cancer and other tumors, severe trauma, biliary and renal colic, gangrene, and myocardial infarction. It is also useful for preoperative medication and postoperative relief of pain.

Levorphanol tartrate produces side-effects similar to those of morphine, except that it is less likely to cause constipation. Pruritis or sweating occurs infrequently. Nausea, emesis, and dizziness occur more commonly in ambulatory patients, as occurs with the use of other narcotic analgesics. The contraindications are the same as for morphine. Because the drug exhibits an addiction liability similar to that of morphine, the same precautions should be observed as for other addicting analgesics.

Dosage—Levorphanol tartrate is administered either orally or subcutaneously. The recommended average adult dose is 2 to 3 mg. Dosage may be subject to adjustment, in accordance with the age and weight of the patient, the severity of pain, and the development of tolerance. As with other addicting analgesics, initial dosage should be as low as possible in the management of intractable pain to delay the development of tolerance.

Tests and Standards—

The following tests and standards apply to the hydrated material unless otherwise specified.

Physical Properties—Levorphanol tartrate is a white, odorless, bitter crystalline powder, m.p. 114-116°. It is very slightly soluble in chloroform and ether. The approximate amounts that dissolve at 25° in the following

solvents to form 100 ml of solution are 0.9 gm in alcohol and 2 gm in ether. Levorphanol tartrate is stable to light, air, heat, and moisture. The pH of a 0.2% solution is 3.4-4.0.

Identity Tests—Dissolve about 10 mg of sodium molybdate in 10 ml of sulfuric acid. Place about 1 mg of levorphanol tartrate on a spot plate and add 5 drops of the molybdate solution; the solution turns blue (distinction from methorphan hydrobromide that turns greenish yellow).

Add about 2 drops of 40% formaldehyde to 3 ml of sulfuric acid. Place about 1 mg of levorphanol tartrate on a spot plate and add 5 drops of the formaldehyde solution; the solution turns brownish yellow. Dilute the solution with about 1 ml of water; it turns greenish yellow.

Suspend about 5 mg of levorphanol tartrate in 1% resorcinol in sulfuric acid and warm gently; a red color develops (presence of tartrate).

The specific rotation $[\alpha]_{25}^D$ of a solution containing 0.75 gm of anhydrous levorphanol tartrate in 25 ml of water is -15.4 to -16.2°.

A 0.006% alcoholic solution of levorphanol tartrate exhibits ultraviolet absorption maxima at about 220 and 282 mμ [specific absorbancy $E(1\% \cdot 1 \text{ cm})$, about 58] and a minimum at about 245 mμ.

Purity Tests—Dry about 1 gm of levorphanol tartrate accurately weighed in a vacuum at 105° for 6 hours; the loss in weight does not exceed 9%.

Char an amount of levorphanol tartrate, accurately weighed equivalent to about 0.5 gm of anhydrous levorphanol tartrate; cool the residue and add 1 ml of sulfuric acid; heat cautiously until evolution of sulfur trioxide ceases; ignite, cool, and weigh; the amount of residue is negligible.

Assay (Levorphanol)—Transfer to a 125 ml separatory funnel an amount of levorphanol tartrate, accurately weighed equivalent to about 0.2 gm of anhydrous levorphanol tartrate; dissolve it in 20 ml of water and add 1 gm of sodium bicarbonate and shake carefully. Extract the liberated base with eight 25 ml portions of a 1:3 chloroform-ether mixture and combine the extracts in a 250 ml separatory funnel. Wash the extracts with three 5 ml portions of water. Reextract the wash solution with two 10 ml portions of chloroform-ether, adding these extracts to the combined chloroform-ether extracts. Add exactly 10 ml of 0.1 N hydrochloric acid to the extract; shake thoroughly for 2 minutes, and transfer the aqueous layer to a 125 ml Erlenmeyer flask. Add two 5 ml portions of water to the chloroform-ether and without shaking transfer the aqueous layer to the acid extract. Wash the chloroform-ether with four 10 ml portions of water, combining the washings with the acid extract. Titrate the excess acid with 0.1 N sodium hydroxide using 2 drops of methyl red T.S. as an indicator. Each milliliter of 0.1 N hydrochloric acid consumed is equivalent to 0.02574 gm of levorphanol and 0.04075 gm of anhydrous levorphanol tartrate. The amount of levorphanol is not less than 62.2 or more than 64.1%, equivalent to not less than 98.5 or more than 101.5%.

Dosage Forms of Levorphanol Tartrate

SOLUTIONS **Physical Properties**—The pH of the 0.2% solution is 3.4-4.7.

Identity Tests—In the case of solutions containing phenol, evaporate to dryness on a steam bath an amount of solution equivalent to 8 mg of levorphanol tartrate. Add 3 ml of water, and again evaporate the solution to dryness. Repeat the addition of water and evaporate twice more. Transfer the residue to a 100 ml volumetric flask with the aid of alcohol and fill to the mark with alcohol. The solution responds to the spectrophotometric identity test for the active ingredient in the monograph for levorphanol tartrate.

In the case of solutions containing parabens, extract an amount of solution equivalent to 8 mg of levorphanol tartrate with four 10 ml portions of ether. Separate the aqueous layer and evaporate it to dryness on a steam bath. Transfer the residue to a 100 ml volumetric flask with the aid of alcohol, and fill to the mark with alcohol. The solution responds to the spectrophotometric identity test for the active ingredient in the monograph for levorphanol tartrate.

Assay (Levorphanol)—Transfer to a 125 ml separatory funnel a volume of solution accurately measured equivalent to about 50 mg of anhydrous levorphanol tartrate. Add 5 ml of 5% sodium bicarbonate, and extract the liberated base with six 20 ml portions of 1:3 chloroform-ether. Wash the combined extracts with two 5 ml portions of saturated sodium chloride. Add exactly 10 ml of 0.02 N hydrochloric acid to the extract; shake thoroughly for 2 minutes and transfer the aqueous layer to a 125 ml Erlenmeyer flask. Add two 5 ml portions of water to the chloroform-ether and without shaking transfer the aqueous layer to the acid extract. Wash the chloroform-ether with four 5 ml portions of water and combine the washings with the acid extract. Titrate the excess acid with 0.02 N sodium hydroxide using 2 drops of methyl red T.S. as an indicator. Each milliliter of 0.02 N hydrochloric acid consumed is equivalent to 0.008148 gm of anhydrous levorphanol tartrate. The amount of anhydrous levorphanol tartrate is not less than 93 or more than 107% of the labeled amount calculated to the anhydrous basis.

TABLETS **Identity Tests**—Powder 10 tablets, and transfer the powder to a 250 ml Erlenmeyer flask. Add 50 ml of alcohol; shake for 15 minutes and filter. Pipet into a 100 ml volumetric flask an amount of filtrate equivalent to about 10 mg of levorphanol tartrate and fill to the mark with alcohol. The solution responds to the spectrophotometric identity test for the active ingredient in the monograph for levorphanol tartrate.

Assay (Levorphanol Tartrate)—Weigh 20 tablets and powder them. Transfer to a 100 ml volumetric flask an amount of powder accurately weighed equivalent to about 12 mg of levorphanol tartrate dihydrate (about 11 mg of anhydrous levorphanol tartrate); add 20 ml of diluted

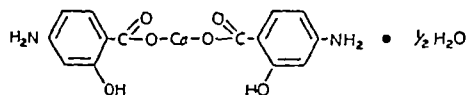
sulfuric acid and 50 ml of water and shake the flask for 15 minutes. Fill to the mark with water and mix. Centrifuge a portion of the mixture for 5 minutes at 2,000 rpm. Transfer to a 50 ml glass-stoppered centrifuge tube labeled sample. 10 ml of the clear supernatant liquid. To a second centrifuge tube labeled standard add 10 ml of standard levorphanol tartrate solution (In a 1,000 ml volumetric flask dissolve 0.12 gm of levorphanol tartrate dihydrate-N-N-R accurately weighed in 200 ml of diluted sulfuric acid. Dilute to the mark with water and mix. Pipet 10 ml of the solution into a 100 ml volumetric flask dilute to the mark with water, and mix.) To the third centrifuge tube add 10 ml of water. To each tube add 5 ml of buffer (17 gm of potassium dihydrogen phosphate 105 ml of 1 N sodium hydroxide and enough water to make 500 ml). Shake the tubes gently. Then add 5 ml of bromothymol blue (Grind in a small mortar 0.1 gm of bromothymol blue with 16 ml of 1 N sodium hydroxide. Transfer the solution to a 400 ml beaker and dilute to about 200 ml with water. Boil the solution for about 30 sec with constant stirring. Cool and dilute to 250 ml. Filter the solution if necessary.) To each tube add 20 ml of benzene accurately measured. Shake the tubes vigorously for about 2 minutes and centrifuge at 2,000 rpm for 2 minutes. Without disturbing the aqueous layer transfer by means of a syringe at least 13 ml of each benzene layer to 50 ml Erlenmeyer flasks. Pipet 10 ml of each of the benzene solutions into three 125 ml separatory funnels properly labeled. To each separatory funnel add 40 ml of benzene and 20 ml of 0.02 N sodium hydroxide accurately measured. Shake the funnels vigorously for 1 minute. Separate the aqueous layers centrifuge at 2,000 rpm for 2 minutes and spectrophotometrically determine the absorbancies in 1 cm cells at 610 mμ using the solution of zero concentration as the blank. (The weight of levorphanol tartrate dihydrate in milligrams per tablet = (absorbancy of sample × wt of standard in mg. × average wt of tablet in mg.) ÷ (absorbancy of standard × wt. of sample in mg. × 10). Each milligram of the dihydrate is equivalent to 0.9188 mg of anhydrous levorphanol tartrate. The amount of anhydrous levorphanol tartrate is not less than 93 or more than 107% of the labeled amount calculated to the anhydrous basis.

Hoffmann LaRoche, Inc., Nutley, N J

Solution Levo-Dromoran Tartrate 1 cc ampuls and 10 cc vials. A solution containing 2 mg of levorphanol tartrate dihydrate in each cubic centimeter. Ampul solutions are preserved with 0.18% methylparaben and 0.02% propylparaben, vials solutions are preserved with 0.5% phenol.

Tablets Levo-Dromoran Tartrate 2 mg. Each tablet contains 2 mg. of levorphanol tartrate dihydrate. U S patent 2,524,855. U S trademark 540,115.

Calcium p Aminosalicylate—The structural formula for calcium p-aminosalicylate may be represented as follows:



Actions and Uses—Calcium p aminosalicylate shares the actions and uses of p-aminosalicylic acid and sodium p aminosalicylate. See New and Nonofficial Remedies under the monograph on p-aminosalicylic acid. Calcium p aminosalicylate has no established advantage over the sodium salt, except that it can be administered to patients on a sodium restricted diet. Its therapeutic activity is considered equal to that of sodium p-aminosalicylate. The incidence of gastric intolerance or other side-effects has not been shown conclusively to be less with the calcium than with the sodium salt.

Dosage—Calcium p aminosalicylate should be administered orally, and the dosage should not be less than that usually recommended for the acid or for the sodium salt: 12 to 15 gm daily, divided into not less than three equal doses of 4 to 5 gm each given every eight hours before or preferably between meals. Theoretically, the dose of the hydrated calcium salt would be about 25% larger than the usual dose of the acid to provide an equivalent amount of the drug, whereas the hydrated sodium salt would require only a 15% larger dose than the acid. However, a total daily dose of 15 gm of the sodium p aminosalicylate yields about 1.6 gm of sodium that makes the sodium salt unsuitable for p-aminosalicylic acid therapy in patients who are required to restrict sodium intake.

Fine Chemicals Division, American Cyanamid Company, Princeton, N J

Powder Calcium Para Aminosalicylate Bulk, for manufacturing or compounding use.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

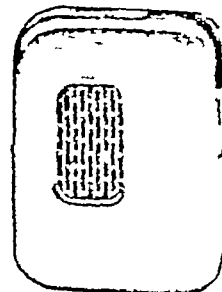
RALPH E. DE FOREST, M.D., Secretary

Unex Hearing Aid, Model TR-3D

Nichols and Clark, Inc., Hathorne, Mass.

The Unex Hearing Aid, Model TR-3D, is a tubeless instrument that contains three transistors and uses one 1.25 volt cell, referred to as an "energy capsule." The body of the instrument measures 54 by 41 by 14 mm and weighs 37.3 gm. The battery weighs 3.6 gm, the earphone 7.7 gm, and the receiver cord 2 gm, making the total weight 50.6 gm.

The volume control is combined with the on-off switch, there is no tone control. The tone and power performance can be modified by choosing from eight possible receivers.

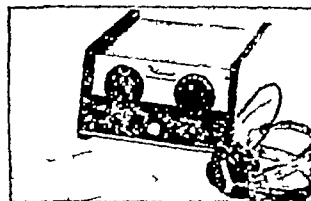


Unex Hearing Aid, Model TR-3D

Panacoustic Pure Tone Screening Audiometer, Model A-500

U S Recording Co., 1121 Vermont Ave., N.W., Washington 5, D.C.

The Panacoustic Audiometer, Model A-500, is a pure tone screening audiometer. It is intended to meet the need for a small desk top instrument to test a subject's pure tone hearing loss as a function of frequency within the accepted range for screening devices of this type. The frequency selecting dial enables the operator to choose 500, 1,000, 2,000, 3,000, 4,000, or 6,000 cps. The output dial is graduated to read directly in decibels of hearing loss, with detented steps of 5 db per step and a range from -10 to +70 db with respect to average normal threshold.



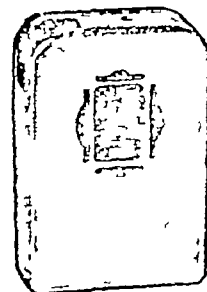
Panacoustic Pure Tone Screening Audiometer Model A-500

The instrument requires 60 cycle alternating current at 110 to 115 volts and draws 20 watts. Unpacked it measures 27 (height) by 26 by 14 cm (10¾ by 10¼ by 5½ in.) and weighs 5 kg (11 lb 3 oz). Packed for shipment it measures 40 by 33 by 19 cm (16½ by 13 by 7½ in.) and weighs 8.2 kg (18¼ lb). The shipping weight includes a standard diagnostic air conduction receiver (earphone), dummy receiver, and a pad of blank audiogram charts. The complete equipment is housed in a carrying case.

Acousticon Hearing Aid, Model A-330

Dictograph Products Inc., 95-25 149th St., Jamaica 35, Long Island, N.Y.

The Acousticon Hearing Aid, Model A-330, is a tubeless instrument that contains three transistors. Its power supply is a 1.25 volt mercury cell which weighs 4 gm. The body of the instrument measures 63 by 44 by 20 mm and weighs 68 gm. The earphone weighs 10 gm and the receiver cord 2 gm, making the total weight 84 gm.



Acousticon Hearing Aid Model A-330

THE JOURNAL

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MULTIPLE SCLEROSIS

Multiple sclerosis is one of the commonest organic diseases of the nervous system and is being recognized in the United States with ever-increasing frequency. About 250,000 persons in this country suffer from this disease.¹ It is characterized by central nervous system demyelination the cause of which is unknown. A vitamin or mineral deficiency, infection with a virus, a glandular disturbance, or an allergy have been suggested as the cause, but no conclusive evidence of any of these theories has yet been advanced. It develops as an acute disease without warning in young adults and runs an intermittent course characterized by exacerbations at intervals of weeks, months, or years. These recurrent attacks may last a few days or several months. In some patients complete disability results, and in others the process becomes arrested.²

Charcot's triad, consisting of scanning speech, nystagmus, and intention tremors, is of no practical diagnostic value because it is usually seen in patients with far-advanced disease and may never occur in some patients. The early symptoms are extremely varied and depend on the portion of the nervous system involved. Because of the remissions, many patients are considered neurotic in the early stages of the disease, but recurrence of weakness or paresthesia in one or more extremities, diplopia, or unilateral blurred vision, vertigo, changes in emotional balance, a spastic or ataxic gait, or loss of bladder control and possibly nystagmus, pallor in the temporal half of the optic disk, loss of abdominal reflexes, or a Babinski sign should lead to the correct diagnosis. The managing physician should, however, maintain at all times a challenging attitude toward this diagnosis. Once such a diagnosis has been made it is difficult for a physician seeing the patient for the first time at a later date to disavow the earlier diagnosis because a changing clinical picture is characteristic of the disease. Although some observers have warned against the use of spinal

puncture, pneumoencephalography, and myelography in these patients, most physicians who have had a wide experience with this disease advocate the use of these measures in order to rule out multiple sclerosis if possible. Furthermore they believe that when properly performed these procedures will not harm the patient.³

Because most patients with this disease live many years, the management of the disease offers a real challenge for the medical profession. Many drugs have been used but with questionable success. Myanesin (3-o-toxyl-1,2-propanediol) and d-tubocurarine in oil have proved disappointing and are neither safe nor dependable.⁴ In treating muscular spasticity, adenosine is helpful in treating some patients with urinary incontinence, and gonadotrophic hormones have been tried for patients with emotional instability. If a patient has evidence of any allergy, it should be treated, but no definite evidence that multiple sclerosis is an allergic manifestation has yet been produced. The aim of treatment is to mitigate the consequences of the disease. This is a task for the general practitioner, but he should have the support of neurological, ophthalmologic, urologic, orthopedic, and physiotherapeutic consultants. Since exacerbations may be brought on by excessive physical fatigue, emotional stress, trauma, infection, general anesthesia, and extremes of temperature, appropriate steps should be taken to prevent these influences.⁴

Although no patient with multiple sclerosis should be told that nothing can be done for him, neither should he be told that his condition can be cured.¹ Frank discussion with the patient will prevent his wasting time and money in a fruitless search for cure and will also allow him to make a better psychological adjustment to his disease, relieve him of the worry of uncertainty and the fear of the unknown, and result in his better cooperation in his treatment.⁵ Much aid in meeting the problems of managing this disease, especially in the matter of physical therapy and rehabilitation, may be obtained from the National Multiple Sclerosis Society in the form of brochures for physicians and for patients in various stages of the disease. An attitude of cheerful enthusiasm on the part of the physician will be reflected in the patient's progress, and no physician should undertake to treat this disease with any other attitude.

ENDOMETRIOSIS

Endometriosis is important because of the pain and disability it causes and because in many patients it causes sterility. The incidence of reported cases is increasing, but whether this represents a real increase or is due to increased recognition of the condition is not clear.¹ There are still conflicting views about its cause and treatment, and, although none of them satisfactorily explain the cause in all cases, the most popular theory is that some endometrial cells during menstruation flow back through the oviducts into the pelvic cavity. Experiments on monkeys have established the fact that such cells are viable and are capable of producing endometriosis.¹ This theory does not, however, explain the occurrence of similar lesions in more distant parts of the body. According to another theory endometriosis arises from a meta-

1 Walnerdl, H. R. The Management of Patients Who Have Multiple Sclerosis, *M. Ann. District of Columbia* 23: 7-14 (Jan.) 1954.

2 Allen, I. M. Disseminated Sclerosis, *M. J. Australia* 1: 858-861 (June 13) 1953.

3 Walnerdl, H. R. Personal communication to the author.

4 Jewesbury, E. C. O. On Disseminated Sclerosis, *Med. Illus.* 7: 517-521 (July) 1953.

5 Tarlau, M. The Attitude of the Patient Toward Multiple Sclerosis, *New York J. Med.* 54: 680-682 (March 1) 1954.

1 TeLinde, R. W., and Scott, R. B. Experimental Endometriosis, *Am. J. Obst. & Gynec.* 60: 1147-1173 (Nov.) 1950.

plasia of the celomic epithelium.² This theory best explains the lesions found at some distance from the uterus. Since endometrial tissue has often been found in pelvic lymph nodes, some believe that viable endometrial cells may spread through the lymph channels. Javert³ found evidence of endometriosis in 6.5% of the pelvic nodes removed at laparotomy or autopsy in women, and, if the patient had a coexisting pelvic endometriosis, the lymph node involvement was 29%. This theory, however, does not explain remote lesions.

Meigs⁴ has attempted to correlate the occurrence of endometriosis with the modern tendency to postpone marriage and to infrequent childbearing. In support of his theory he points out that endometriosis is relatively rare in women under 26 years of age and calls attention to a higher incidence of endometriosis in a series of consecutive admissions to private rooms compared with those to wards. That the patients in private rooms married later and had fewer children, there can be no doubt, but Cavanagh⁵ suggests that the group of ward patients was more heavily weighted with admissions for fibroids and pelvic inflammatory disease. In a more carefully controlled series from the Sloane Hospital for Women he found no difference in the incidence of endometriosis in patients in private rooms and in wards. Huffman's observations² revealed no definite correlation between the extent of endometriosis and the number of pregnancies per patient. Siegler and Bisaccio⁶ were also unable to confirm Meigs' conclusions. It would seem, therefore, that sterility is the result rather than the cause of endometriosis in these patients.

In women in the childbearing period, endometriosis is associated with dysmenorrhea, menorrhagia, metrorrhagia, low abdominal pain, backache, and dyspareunia, but in women who have passed the menopause it is asymptomatic. The diagnosis is important because the condition is often mistaken for cancer. A shotty cul-de-sac is pathognomonic of endometriosis. Tenderness of the cul-de-sac and adnexa and enlargement of the ovaries and uterus may also be found. Huffman² urges that endometriosis be graded as are other tumors and has proposed four stages, which he describes. Such a classification is useful in determining treatment. Other factors to be considered are the age of the patient and whether children are desired. Estrogens and androgens have been used, but, although they may give some relief from symptoms, they are not without danger and when their administration is discontinued the symptoms return. Surgical removal is the treatment of choice for those patients in whom treatment is required, and in young women who wish to have children the lesions should be dissected out and ovarian and tubal tissues preserved. Presacral neurectomy is often included in the operative procedure to relieve severe dysmenorrhea.⁶ Radiation with x-rays or radium is used as a last resort for those in whom conservative treatment fails or recurrence of intestinal and bladder symptoms suggest further involvement.⁴ Frequently, however, recurrences require no treatment. Siegler and Bisaccio observed no significant difference in the number of pregnancies resulting from conservative treatment, palliative treatment, or no treat-

ment in women in the same age groups. As suggested by the variety of theories as to the cause of endometriosis, different factors may be at work in different patients. According to present indications, the treatment of these women should be highly individualized.

NEW RECORD FOR TODAY'S HEALTH

With the October issue, *Today's Health* will reach a circulation of over 340,000 copies, which is the highest circulation figure in its 31 year history as *Hygeia* or under its present title. A substantial part of this increase in circulation is due to the diligent efforts of the Woman's Auxiliary to the American Medical Association and their subscription projects at the national, state, and local county level. The Woman's Auxiliary has devoted a great deal of their program to the promotion of subscriptions, because they recognize that the magazine can fulfill its purpose only when it reaches the persons for whom it is written. *Today's Health* is now found in the reception room of more than 103,000 physicians and 45,000 dentists throughout the United States and possessions. These copies are seen by many thousands of patients every week.

The magazine is edited for the lay public and emphasizes their personal need for a family doctor and the community's need to suppress medical fraud and quackery. The increase in circulation is helping the magazine to reach its goal of maximum usefulness to the medical profession. The Woman's Auxiliary is stressing the fact that *Today's Health* reliably discusses the personal and community health needs of the lay public and how to meet them adequately. This same fact is being stressed by the nation's leading magazine subscription agencies, who have reported a marked increase in interest in the magazine during the past months. Schools, colleges, woman's service groups, rural health groups, youth organizations, and business and industrial firms are continuing to make more use of the magazine in their health education programs. A lowered subscription rate is available to these groups when they order 10 or more copies to be sent to one address, and the same low rate applies when 25 or more copies are ordered by one group to be sent to the individual home or office address. The nation's railroads, airlines and steamship lines have asked for copies to be made available to them, and soon *Today's Health* will be found in the lounges of the country's leading passenger carriers. With the increase in new readers, there has been a heartening increase in renewal orders, which confirms the wider acceptance of the magazine by the lay public and portends an even larger circulation in the future.

2 Huffman J W. External Endometriosis. *Am J Obs & Gynec*. 62: 1243-1252 (Dec) 1951.

3 Javert C T. The Spread of Benign and Malignant Endometrium in the Lymphatic System with a Note on Coexisting Vascular Involvement. *Am J Obs & Gynec*. 64: 70-806 (Oct) 1952.

4 Meigs J V. Endometriosis. *Eucor*. Proc of Mamm. Age and Parity. Conservative Treatment. *Obs & Gynec*. 2: 26-31 (July) 1951.

5 Cavanagh W V. Fertility in the Etiology of Endometriosis. *Am J Obs & Gynec*. 61: 419-427 (March) 1951.

6 Sorens S L and Bisaccio J R. Endometriosis. Clin Obstetrics and Therapeutic Considerations. *Am J Obs & Gynec*. 61: 99-110 (Jan) 1951.

ORGANIZATION SECTION

CIVIL DEFENSE

Following is the second section of the third and last of a series of articles on medical civil defense plans that have been prepared for the state of Maine. These plans are being published as samples for those states that have not as yet completed this phase of medical civil defense planning.—ED

Plans for Special Weapons Defense Part III

Chemical Agents Defense Plan, Section 2

CHEMICAL WARFARE DECONTAMINATION PROCEDURES

Contamination by chemical warfare agents may vary greatly in nature. Some of these agents are true gases under ordinary conditions and will drift with the wind until dispersed. Most

ous medical treatment quickly follows administration of first aid. It is not the purpose of this section to enlarge on this topic, which requires intensive treatment, for the moment, it must suffice to refer to the self-aid chart. Personnel who carry out decontamination procedures should follow the directions that are given below. These directions are of a general nature and might be subject to change in the event of an actual attack, depending on the type of chemical agent that is used. In general, decontamination may be carried out by either removing or destroying the agent. Inanimate objects and ground areas are usually best decontaminated by destroying the contaminating agent with other chemicals and, in some instances, by removing the resultant residues.

Self-Aid and First Aid Measures for Persons Contaminated with Chemical Agents

Physical Classification	Name	Symbol	Protection	Treatment	
				Self Aid	First Aid
Blister Gases	Mustard	II	Gas mask	FLFS. For all liquid blister gases. Squeeze BAL ointment into lower eyelids, massage for 1 min, then flush with water for 30 sec to 2 min. If eyes cannot be opened, rub BAL on lids until it can be squeezed into lower lids. Note: Eyeshields properly used, will prevent blister gas eye injuries. SKIN. For all liquid blister gases. With cloth or absorbent wrapping of ointment, blot all liquid from skin, then discard absorbent. Rub on ointment S 330 for 15 sec, then remove. (Reapply and remove for large splashes.) Rub on BAL and leave for at least 5 min, then reapply BAL. Wash well with soap and water as soon as possible. Note: This procedure may be modified by local authorities if contamination is positively known to be a single blister gas. For H or HN alone, use S 330. For L alone, use BAL. On skin already reddened, use soap and water in preference to S 330. CAUTION: Liquid gases vaporize from the skin, clothing, equipment, and other objects; therefore turn face away and breathe as little as possible until the eyes and face are decontaminated and the gas mask donned. Remove contaminated clothing and treat underlying skin. Clothing must be decontaminated or discarded, so that vapors will not contaminate other men.	1. Treat burns with sterile dry dressing. 2. With injuries: a. Treat specific injury. b. Arrest hemorrhage. c. Treat shock if present. d. Decontaminate skin and clothing. e. Control pain.
	Nitrogen Mustards	HN	Protective clothing		
	Lewisite	L	Protective ointment		
	Ethylchlorarsine	FD	S 161 or S 330		
	Methylchlorarsine	MD	Protective cover		
	Phenylchlorarsine	PD	Eyeshield		
	Mixed blister gases				
G	Phosgene	CG	Gas mask	Immediately don gas mask. No other self aid is necessary unless breathing becomes difficult. In that event, keep quiet and warm until given medical attention.	1. Rest. 2. Keep comfortably warm. 3. Oxygen for anoxia.
	Diphosgene	DP			
	Chlorpicrin	PS			
Nerve Poisons	Hydrocyanic acid	AC	Gas mask	Immediately don gas mask. If conscious and breathing, no further treatment is necessary.	Systemic: 1. Inhalation Amyl Nitrite 2. Artificial respiration.
	Fluoroacetates	G	Gas mask with special canister	Immediately don gas mask if a feeling of tightness or constriction occurs in the chest or if breathing is difficult, or if eyes of persons in the vicinity have very small pin point sized pupils. Remove any liquid nerve gas on skin or clothing by blotting with absorbent material. Scrub contaminated flesh with clean wet cloths and remove or cut away clothing. If muscle twitching develops in contaminated areas, use atropine ampuls if available. If breathing difficulties persist, repeat atropine injections after 5 to 10 min. A third injection may be used if needed in another 10 min, but no more.	Mild: Small doses atropine. Severe: 2 mg atropine intravenously to relieve symptoms. If convulsions are not adequately controlled by atropine sulfate, they may be controlled by the intravenous or intramuscular injection of 2.5% thiopental sodium administered slowly until convulsions lessen to the point that they do not threaten life. Positive pressure resuscitation by the Holger Neilson or by the hip roll prone pressure methods.
	Fluoralkylfluoroacetates				
	Fluoroalcohols				
	Fluorophosphates				
	Dialkylamidofluorophosphates				
	Sarin (Isopropyl ester of methanephosphoryl fluoride), Soman				

such agents, however, are liquids of varying degrees of volatility that may be spread by shell bursts, as a mist or aerosol by aircraft, or by the dropping of bombs filled with such agents. These liquids will deposit on the ground and on objects such as shrubs, trees, and buildings and remain there for an indefinite period, depending on the nature of the particular contaminant.

As long as such a liquid remains in a given area, it will vaporize and contaminate the air. Persons entering the area may suffer contamination by inhaling the vapor or by picking up the liquid chemical agent on flesh or clothing by contact with contaminated surfaces. This will result in many casualties unless contaminated areas are delimited or decontaminated as rapidly as possible. The effect of chemical warfare agents on the human system will vary greatly with the type of material involved. In some cases only considerable discomfort, without serious after-effects, results. In other cases serious disabilities are inevitable, leading to a large number of deaths unless vigor-

Organization of Chemical Defense Decontamination Units— The following personnel is required per unit

- Junior chemical officer (1)
- Assistant chemical officer (2)
- Decontaminators, sprayers, loaders, helpers (12)
- Driver operator of decontamination equipment (3)

Such a unit can service an urban area with a population of 5,000 to 10,000. Units of four to eight persons may be more practicable when personnel or working space is limited. Units of this complement will handle decontamination of any facility exposed to the action of chemical agents, radioactive material, or bacteriological agents, and may also act as triple-action units, serving at need as casualty decontamination groups or as first aid units in the handling of chemical or other special weapons casualties. The personnel for this work should be accustomed to heavy work, and, since they will work in impermeable protective clothing part of the time, they should be in good physical condition.

Materials required for decontamination units are as follows

Equipment	Required Per Unit
1. Decontaminating apparatus 1½ qt M3*	7
2. Decontaminating apparatus 3 gal M1*	9
3. Decontaminating apparatus power driven, M3A3*	2
4. Shovels	6
5. Rakes	6
6. Brooms	6
7. Pails 8 qt	6
8. Drum 55 gal no head	4
9. Axes and picks	4
10. Scythe	3
Supplies (Quantities required depend on the area requiring decontamination)	
1. One of the following chlorine compounds	
Bleaching powder (CaOCl ₂)	
Sodium hypochlorite	
H T H	
Perchloran	
Other commercial substances	
2. Sand ashes or sawdust	
3. Kerosene	
4. Dye solution M4*	
5. Area marker signs	
6. Marker tape or rope	
Impermeable Protective Clothing (Butyl rubber coated)	
1. Suit protective impermeable one piece M3*	20
2. Hood protective impermeable M3*	20
3. Gloves protective impermeable pair M3*	20
4. Boots rubber short heavy knee pair	20
5. Covers boot impermeable pair M1	20
6. Suit cooling two piece diaper cloth M1*	20
7. Hood cover cooling M1*	20
8. Mask protective M3A1* or other approved type	20
Protective Accessories	
1. Protective ointment kit M3A1* containing	20
Protective ointment M4* 8 tubes	
BAL eye ointment 1 tube	
Atropine tartrate injection 3 tubes	
2. Protective dubbing for shoes or leather boots can	20
Impregnated Clothing (Optional)	
1. Protective hood	20
2. Coat	20
3. Trousers	20
4. Socks pair	20
5. Overshoes rubber high top pairs	20
6. Gloves pair	20
7. Tape masking wide roll	5

*The letters and numerals refer to the armed forces numbers for the items and are included to facilitate matters if these items are made available to states civil defense agencies for purchase on the matching fund list

The impermeable clothing and accessories must be worn by the members of the decontamination units whenever persistent, liquid nerve gas has been identified or is suspected of being present in contaminated areas. Impregnated clothing does not afford protection against the liquid nerve gases, but it does afford limited protection against liquid blister gases and biological and residual radiological contamination. If liquid nerve gases have not been used, but a lesser degree of contamination with other chemical agents or biological agents exists, the following equipment is permissible, it has the advantage of permitting members of the decontamination unit to work longer and in greater comfort than would be possible with the impermeable clothing.

Impregnated clothing as listed above
M4 k protective M3A1

When chemical and biological agents are absent and only radiological contamination is present, members of the decontamination unit will need only the following items:

White or olive drab coveralls
Canvas covers for shoes
White canvas gloves with long cuffs
Wide masking tape for making dustproof seal between bottoms of coveralls, sleeves and top of gloves and between bottoms of trousers legs and canvas shoe covers
M4 k protective M3A1*

Preliminary Duties of Decontamination Units—When chemical contamination is reported to the control center by a chemical warfare detection unit, a decontamination unit should be dispatched to the designated area to immediately determine and

mark off the contaminated area, if this has not already been done and establish the decontamination station upwind of the source of contamination in order to prevent pollution of the equipment and personnel by wind drift of the volatile chemical agents. Other units involved, such as spray trucks and supply trucks carrying spray equipment, tools, and chemicals, should be arranged so as to attack the polluted area most efficiently and with minimal possibility of secondary contamination of these work units. Decontamination personnel must protect themselves properly before entering the contaminated area, the protective clothing and equipment required will vary, depending on the type and characteristics of the chemical warfare agent used by the enemy. In general, impermeable boots, suit, and gloves and a gas mask with a suitable canister will suffice for protection against both the persistent nerve and blister gases and the other, more conventional war gases. Protective clothing should be examined frequently for possible contamination, as some types of such clothing are slowly penetrated by certain liquid agents. Any visible contamination must be rapidly removed by blotting with absorbent cloths which are later burned with proper precautions. The impermeable clothing may be scrubbed with slurry while the garments are being worn. The slurry is washed off with water after a few minutes. Testing of clothing for chemical agents should be done occasionally with detector units, especially if contamination is suspected. If the contamination is heavy and cannot be removed as indicated above, the clothing must be removed carefully to avoid spreading of contamination and replaced by fresh protective clothing. Detailed instructions for procedures for decontamination of clothing of various types may be found in Department of the Army Technical Manual 3-220, chapter 4, section 4.

Specific Decontamination Procedures—The chemical agent that is most readily available and is highly effective in most, if not all, cases is bleaching powder, sometimes known as chloride of lime. The chemical formula of this material is CaOCl₂; it is not actually chloride of lime but is partially a hypochlorite of lime. In its place one may also use sodium hypochlorite, commercial bleaching solution or commercial substances such as H T H or Perchloran, which also furnish available chlorine. The available chlorine of such compounds destroys the chemical agents by oxidation. Dilution of such materials should be in the same proportion per 30% available chlorine as for the usual 30 to 35% available chlorine bleaching powder. Such sources of available chlorine must not be directly applied to the contaminated areas as a dry solid or chemical reaction may proceed so rapidly as to produce flame and heat. The heat will cause much volatilization of the chemical agent, endangering persons who might be in otherwise safe areas adjacent to the contamination.

Decontamination of Roadways, Paths, and Bridges 1 If a spray truck or hand spraying equipment is available, heavily contaminated sections should be thoroughly sprayed with a mixture of equal parts of water and bleaching powder after which the entire area may be copiously washed down with water from a spray truck or hose. 2 If such equipment is not available, a mixture of bleaching powder and dirt should be spread with shovels and rakes so as to cover the contaminated area. When the usual commercial bleaching powder having about 35% available chlorine is used, one part of bleach should be thoroughly mixed with three parts of soil or sand before such application to prevent evolution of excessive heat. This procedure is preferable to the use of a water slurry described above if the surface being treated is loose and porous and will absorb much of the chemical agent. Spading of loose ground is also advisable to mix the bleach more thoroughly. In such manual application of a mixture of dirt and bleach, personnel must remain upwind of the treated areas to avoid possible drafts of volatile material due to the evolution of heat as decontamination proceeds. If possible, such application of the solid mixture may be carried out from a truck. After this type of decontamination procedure tests must be made from time to time with a detection unit and further treatment carried out if needed. 3 If no bleaching powder is available, copious washing with water may be used to remove the agent from some surfaces. Usually the water, even if hot, will not thoroughly destroy the chemical agent by hydrolysis; residual contamination must therefore be

guarded against. In some cases it may be preferable to cover the contaminated areas with about 3 in. (7.62 cm) of earth, sand, ashes, or sawdust and then wet down this covering. This is only a temporary protection, and chemical action should later be used.

Decontamination of Grass and Underbrush This is best accomplished by burning over such areas in dry periods. Due precautions must first be taken to insure absence of persons in downwind areas where poisonous vapors may be carried.

Decontamination of Equipment and Tools 1 Wooden equipment and tools may be scrubbed with bleach solution and then thoroughly rinsed with hot water and soap. 2 Metal equipment should first be washed by dipping it into gasoline or kerosene or by swabbing with rags saturated with the material. The hands of the operator must be adequately protected with impermeable gloves in such cases and the rags and liquid burned immediately after use, with proper precautions to prevent contamination of persons who may be downwind of the fire. After such treatment, the metal objects should be washed with bleach solution, permitting contact for only a few minutes. Unpainted metal surfaces will become severely corroded if bleach solution or slurry is left in contact with them for longer than an hour. A final washing with soap and hot water must then be made, the object thoroughly dried, and unpainted surfaces oiled. 3 More decontamination procedures and instructions can be found in Department of the Army Technical Manual 3-220, entitled "Decontamination."

Decontamination of Clothing 1 If contamination of clothing is suspected, it should be immediately removed and thoroughly steamed for several hours. A large, covered can, such as a garbage can, is fitted with a false bottom of wood or similar rigid material, 6 to 8 in. (15.2 to 20.3 cm) of water are poured into the bottom of the can, the false bottom inserted, and garments placed on it. The water is heated to boiling and steaming continued for two to eight hours, depending on the contamination, with the can closed. If contamination is still detected after such treatment, the process is repeated until contamination is absent. Immersion in hot water is also suitable if sufficient water is available. 2 Treatment with boiling water is not suitable for lewisite contamination, as a poisonous residue is left in the clothing. 3 Contaminated shoes may be shuffled in a mixture of sand and bleach to remove contaminant that has not penetrated deeply into the leather. When the leather has been penetrated, it is unlikely that contamination can be adequately removed, the shoes should be considered unsafe and destroyed. 4 In the case of grossly contaminated clothing and shoes, the safest recourse would probably be burning in the open, with the usual precautions. An incinerator with a chimney that provides a good draft should also be used. If burning cannot be carried out, the articles should be buried in the ground to a depth of at least 6 to 8 in. (15.2 to 20.3 cm) and the site suitably marked as contaminated with war gas.

Decontamination of Detection Apparatus Thorough decontamination or disposal of apparatus and equipment used in the examination of contaminated air and materials is essential, not only from the standpoint of safety of detection personnel but also to avoid, in subsequent tests, the false positive reactions that might otherwise be obtained from residual traces of war gases in the detection apparatus. Hot alcoholic potash is suitable for the destruction of most gases, but other reagents are more convenient in some circumstances. The nerve gases and lewisite are decomposed rapidly by cold aqueous alkali. On glassware, mustard and nitrogen mustard gas is best destroyed by nitric acid, on rubber tubing, metal forceps, and other, similar articles, by immersion in boiling water for one-half hour. A hot aqueous solution of sodium sulphite will destroy chlorpicrin.

Protection of Water and Food from Contamination To prevent contamination, water and food should be kept in gas-tight containers such as sealed cans and tightly stoppered bottles or in storage rooms sealed against gas. In the absence of the proper type of cans or bottles, food may be carefully wrapped with several layers of cellophane or similarly impervious plastic

materials. If actual contamination of the can, bottle, or food wrapper occurs, such contamination should be removed by swabbing the container with bleach solution and then washing with water. The food wrapper should be immediately removed, if intact, and properly disposed of.

Decontamination of Persons—Procedures follow for treating persons affected or contaminated by liquid nerve and blister gases.

Liquid Nerve Gases Persons who are injured badly or poisoned severely with nerve gas may be unable to administer self-aid. Such persons will require assistance from other available personnel in the area in putting on gas masks, administration of atropine, and decontamination. In general, persons contaminated with persistent liquid nerve gas should be decontaminated as follows: 1 Liquid contamination of the skin must be removed immediately, as the gas is quickly absorbed in lethal amounts through uninjured skin. The liquid should be blotted on cloth or other absorbent and discarded with care, then the contaminated skin area should be swabbed with cotton or cloth pledgets that are well wetted with a suitable alkaline fluid, which is more effective than plain water. Any one of the following fluids should be satisfactory:

- Slurry of 1 part of bleach in 3 parts of water
- 2% solution of sodium hydroxide
- 5 to 10% solution of ammonium hydroxide
- 5 to 10% solution of sodium carbonate

When none of the above alkaline preparations is available, the contaminated skin should be washed with soap and water. 2 Clothing contaminated with liquid nerve gas must be removed as quickly as possible. 3 The casualties must be removed from the contaminated area as soon as possible.

Liquid Blister Gases Immediate removal of liquid blister gases from the exposed skin by blotting with absorbent material, followed by suitable skin decontamination, must be done if chemical casualties are to be reduced to a minimum. Prompt action is absolutely essential. Adequate skin decontamination within the first minute after the liquid vesicant comes in contact with the exposed skin is always successful. No method of decontamination will prevent blister formation if the liquid chemical agent has been in contact with hot, sweaty skin for three minutes or with cool, dry skin for five minutes. Decontamination should be carried out as long as any liquid blister gas is visible on the exposed skin. Specific self-aid procedures to be used in event of contamination with the more probable of the war gases have been listed in the table above. In general, persons who are contaminated with the liquid blister gases should: 1 Deal with liquid contamination of the eyes immediately, as every second counts. Open the BAL eye ointment tube, pull the lower lid down, and squeeze BAL eye ointment into the lower lid. Close the eyelid and gently rub the eye for about a minute to spread the ointment around inside the lid and over the eyeball. Irrigate the eye with water for one half to two minutes. Decontaminate the skin around the eye and eyelashes with BAL eye ointment, and wipe off immediately. Protective ointment M-5 is never used in or immediately around the eyes. This decontamination procedure is effective for mustard gas if done within a few seconds, but after two minutes it is of little value. If BAL eye ointment is not immediately available, the eyes should be immediately washed out with copious amounts of water. Soap and water may be used, if available, to wash liquid blister gases from the eyelids and lashes. 2 Remove liquid blister gas from the exposed skin as soon as possible after eye contamination has been treated, for here, again, time is of paramount importance. Blot free liquid blister gas from the skin and discard the absorbent material. Break the tip off a tube of protective ointment M-5, if available, and apply ointment freely to the contaminated area. Then remove as much as can be removed easily with a fresh, clean cloth, apply another coat of ointment and let it remain. If the contamination is discovered after reddening of the skin has already begun, wash the area with

soap and water only, as the M 5 ointment is then of little value and will further irritate the skin. If protective ointment M-5 is not available, swab the contaminated skin with cotton or cloth pads wet, whenever possible, with one of the following:

- Slurry of 1 part bleaching powder and 3 parts water
- 5 to 10% solution of sodium carbonate
- 5 to 10% solution of ammonium hydroxide

Finally, wash the exposed skin areas thoroughly with soap and water, using a shower whenever one is available. The used water should be drained away as well as possible to isolated areas, and decontamination of this wash water may also be advisable under some circumstances. 3 Cut away and discard contaminated hair and clothing. Decontaminate the underlying scalp or skin with protective ointment M-5, if available, or with soap and water.

Procedures with Contaminated Casualties—If human casualties have already resulted from an attack with war gases, hospital treatment may be required. Thorough decontamination must be done before such patients can be safely admitted to a medical installation; otherwise, equipment, medical personnel, and other patients would soon be secondarily contaminated with the chemical agent. Therefore, a mobile personnel decontamination unit of the type shown on charts 3 and 4 in part 1 of this series, manned by a regular decontamination unit of 12 to 18 persons, should be dispatched promptly to the attacked area if a suitable water supply is available, if a suitable water supply is not available for use, the gas casualties should be transported as quickly as possible in open trucks to the nearest personnel decontamination unit in operation.

Ambulatory Patients Contaminated, ambulatory gas casualties should be directed out of the polluted area, segregated on the downwind side of an adjacent mobile unit, and, from there, carefully moved into the undressing section. All outer clothing is removed in the open and placed in metal garbage cans that are provided for this contaminated clothing. Then the patients proceed up the ramp into the body of the first truck, where undergarments are removed and placed in covered garbage cans, enter the portable shower suspended between the two trucks, remaining for 15 to 30 seconds, or until the chemical agent is completely removed from the body, and enter the clean dressing area in the second truck. Medical treatment and dressings for minor chemical injuries are provided by the nurse or attendant in charge of the first aid station inside the clean truck. Ambulatory patients are provided with clean clothing and allowed to leave the decontamination unit on the upwind side. Those requiring hospital care are transported by bus or ambulance to a designated hospital installation, those less seriously injured are sent home or to a designated billeting area.

Nonambulatory Patients Each seriously injured nonambulatory gas casualty found in the contaminated area should be fitted with a gas mask, given emergency first aid treatment, placed on a 'gas casualty stretcher' (a stretcher covered with wire mesh for easy decontamination) and transported to the decontamination center or to a designated collecting point by specially trained litter bearer teams wearing suitable gas masks and impermeable or impregnated clothing. Open trucks will be required if it is necessary to transport these patients a great distance to a personnel decontamination center, in such cases, first aid should include as complete a cleansing from the chemical agent and as complete replacement of contaminated clothing as possible before the patients are loaded into the trucks. Specially trained decontamination unit attendants equipped with suitable gas masks and impermeable gloves, raincoats, heavy impermeable aprons and hip boots should remove all clothing from the nonambulatory patients and use a water spray from garden hoses equipped with the standard adjustable nozzle to wash the chemical warfare agent from the patient and the stretcher on which the patient remains until the decontamination procedure has been satisfactorily accomplished. Stretcher racks will be needed to support the gas casualty stretchers during this process. Then other attendants place the patient on a clean sheet

on another stretcher, cover him with a suitable number of blankets to provide warmth, and arrange for prompt transfer to the nearest hospital installation for medical treatment.

Decontamination of Litters When possible, regular litters should have impermeable covers fitted over them. This impermeable litter cover remains with the patient when he is removed from the litter, a clean cover, when available, is placed on the litter so that it may be reused without first being decontaminated. If the litter is not covered, it soon becomes contaminated and must be so treated. Decontamination of the standard litter requires that it be disassembled and the parts decontaminated as follows: 1 Litter canvas should be decontaminated by placing it in boiling water for one-half to one hour. Two ounces of washing soda may be added to each 10 gal of water. 2 The wooden poles should be covered with a 30% aqueous slurry of bleach for one fourth to one full day. The wood should then be swabbed dry and left exposed to the air in a warm place. 3 Unpainted metal parts should be wiped dry with rags and then washed with soap and water. Danc may be applied to the surfaces if a blister gas was the contaminant. The clean metal should be allowed to stand in the open air for several hours. Decontamination of the special wire mesh stretcher or of a standard canvas litter that cannot be disassembled can be accomplished in the following manner: 1 The litter may be sprayed several times with Danc, allowing each application to dry, when blister gases are the contaminating agents. 2 The litter should be sprayed with a hot solution of 2 oz. of sodium carbonate per 10 gal of water. The litter should be exposed to the air as long as feasible after treatment before it is used again. 3 The wire mesh stretcher can be immersed in a large tank of the solution used for decontamination and left for the required length of time. Then it can be removed, rinsed off first with soapy water and then with clean water, and allowed to dry in the open air.

Prevention of Secondary Contamination In the execution of the above procedures, precautions must be continually observed to prevent contact of decontaminated persons with contaminated persons and objects. This can be achieved by proper segregation of contaminated persons, careful disposal of waste articles in closely sealed containers until burning can be carried out, and reclothing of decontaminated persons with fresh apparel. Water from the showers for decontamination must be drained away to a segregated area downwind from the decontamination unit. If this waste water is appreciably contaminated, a suitable amount of bleach should be added as it drains away from the showers.

TRAINING OF DECONTAMINATION UNITS

Supplies Required

Field Manuals (Armed Forces Publications)

- 1 FM 21-40 Defense Against CBR (For Unit Officers)
- 2 FM 21-41 Defense Against CBR (Soldiers Manual)

Training Manuals (Armed Forces Publications)*

- 1 TM 3-215 Military Chemistry and Chemical Warfare Agents
- 2 TM 3-220 Decontamination Against CBR
- 3 TM 3-240 Field Behavior of Chemical Agents
- 4 TM 3-300 Military Shelters
- 5 TM 3-290 Individual Protective and Detection Equipment
- 6 TM 8-2.3 Treatment of Chemical Warfare Casualties
- 7 TM 10-304 Mobile Laundry and Decontamination Procedures

World War II Civil Defense Publication

- 1 OCD 2-19 Identification of Chemical Agents
- 2 OCD Protection Against CBR
- 3 CWS 1. Principles of Decontamination
- 4 CWS 2 Training Guide—Chemical Warfare
- 5 WDCPS Aim 3 Detection of Small Quantities of War Gases (Ducktrap)
- 6 WDCPS Aim 3 Stretcher and Littering Experiments with War Gases

* Now available for loan from the War Relocation Authority.

Training Guides

- 1 Gas Identification
- 2 Use of Gas Mask
- 3 Use of Protective Clothing
- 4 Problems in Decontamination
- 5 Chemical First Aid and the Handling of Gas Casualties
- 6 Use of Chemical Neutralizers (Decont.)

Outline of Course of Instruction for Units

- 1 War gases
 - a Historical background
 - b Nature of chemical warfare
 - c Classification of chemical agents
 - d Persistence
 - e Tactical value
 - f Physiological reactions
 - g Methods of use
 - h Characteristics of chemical clouds
 - i Action and movement of chemical clouds (wind)
 - j Effect of weather on chemical agents and their use
 - k Tactical results of chemical agent action
 - l Possibilities of future use
- 2 First aid for gas casualties
 - a General considerations
 - b Lung irritants
 - c Blister gases
 - d Nerve gases
 - e Tear gases
 - f Irritant smokes
 - g Systemic poisons
 - h Incendiaries
 - i Screening smokes
 - j Use of decontamination stations
 - k Recommended contents of chemical first aid chest
- 3 Identification of chemical warfare agents
 - a Purpose
 - b Importance of reconnaissance
 - c Determinations of the presence of war gas
 - d Chemical methods
 - e Sampling
 - f Tests for specific gases
 - g Portable laboratory
 - h Reporting
 - i Decontamination problems
 - j Use and care of protective clothing
 - k Personnel decontamination
- 4 Decontamination instruction and training
 - a Definition
 - b Limitations
 - c Principles of decontamination
 - (1) Chemical action—substitution, oxidation, and hydrolysis
 - (2) Physical or mechanical action
 - d Substances used in decontamination
 - e Types of decontamination apparatus
 - f Use and care of protective clothing
 - g Gas mask drill
 - h Protective clothing drill
 - i Decontamination of area (problem)
 - j Decontamination of vehicles (problem)
 - k Squad decontamination after field duty
 - l Critique

EVENING FILM PROGRAM AT MIAMI MEETING

A special program of motion pictures will be shown Tuesday evening, Nov. 30, at the McAllister Hotel with discussions of the films by the authors. Dr. William B. Rawls, New York, will make a premiere showing of a film "Differential Diagnosis of the Arthritides (Rheumatoid, Osteo, and Gouty)." Another film will be "Congenital Malformations of the Heart" by Dr. Robert

Rushmer, Seattle, presenting the embryology, origin, and functional significance of congenital malformations of the heart that produce cyanosis. Plans are under way for other outstanding films, with the authors personally present to answer questions. The evening program at the McAllister Hotel will supplement the regular motion picture program, which will be shown continuously each day at the Dinner Key Auditorium.

LIBRARY

This is one of a series of brief statements explaining the work of various departments of the American Medical Association.—ED

The library was established in 1903, primarily as a service for American Medical Association members. It serves the physician as an instrument of postgraduate medical education, providing him with a lending library of current medical periodical literature and material on particular medical subjects. A major responsibility of the library is the compiling and editing of the Quarterly Cumulative Index Medicus. It also prepares an index for each volume of THE JOURNAL. The library specializes in current periodical literature on medical subjects. About 1,600 periodicals, including state and county medical journals as well as foreign journals and periodicals in all branches of medicine and related fields, are received regularly and held for 10 years. These unbound periodicals are available on loan to members of the A.M.A. free of charge. Individual subscribers to the scientific journals of the A.M.A. also are eligible to borrow periodicals but are charged a fee of 15 cents in stamps per journal. Only three periodicals may be borrowed at one time, and periodicals may be kept for five days. Requests should be addressed to Library, American Medical Association. About 900 periodical loan requests are received each month. Short lists of references can be obtained from the library, but the library cannot compile extensive bibliographies or handle detailed research requests.

An Association member or an individual subscriber to an A.M.A. scientific publication may write for information on a particular medical subject. From a collection of over 240,000 pamphlets, reprints, and periodical tear sheets, individual loan packages are made up. In an emergency a borrower may specify that his request be specially handled and his package sent first class, airmail, or special delivery, but in this case, the borrower pays for the special mailing charges. A maximum of 14 to 16 articles, four of which may be journals, are sent and may be retained for 10 days. Foreign periodicals are not included unless specifically requested. The package library service is free to A.M.A. members. Individual subscribers to A.M.A. scientific publications may use this service but are charged 50 cents per package. Two weeks must generally be allowed for filling requests. The library fills about 175 package requests each month. This service is especially useful to members in rural areas where there are no large medical libraries.

The Quarterly Cumulative Index Medicus compiled by the library staff provides a ready reference index to medical periodical literature and books currently published in the world. It is an invaluable aid to busy practitioners, specialists, teachers, editors, writers, students, and libraries because it gives in convenient form references to pertinent information in current medical books and periodicals. It is published in two sections, one index is devoted to books, the other to periodical literature. The book section contains a list of current publications alphabetized as to authors, followed by a subject classification of the same material. The periodical index covers about 1,000 periodicals, listed in each volume. It furnishes a compilation of articles from important medical journals, arranged like a dictionary with authors and subjects in one alphabet. The exact bibliographic reference is given under the author, with titles in the original language, while titles under subjects are in English. The index now appears in two volumes a year and is cloth bound. The annual subscription rates are \$20 in the United States and \$22 in Canada and foreign countries.

MEDICAL NEWS

ARKANSAS

Society News—Newly elected officers of the Arkansas Radiological Society include Dr George C Burton, El Dorado, president, Dr Edwin F Gray, Little Rock, vice president, and Dr Joseph A Norton, Little Rock, secretary treasurer

Appoint Professor of Medicine.—Dr Richard V Ebert, professor of medicine at Northwestern University Medical School and chief of the medical service at the Veterans Administration Research Hospital in Chicago, has been appointed professor and head of the department of medicine of the University of Arkansas School of Medicine, Little Rock. Dr James T Wortham has been acting head of the department since the resignation of Dr Benjamin B Wells in the summer of 1953. Dr Ebert is a member of the editorial board, *Journal of Clinical Investigation*. He served in the Army Medical Corps during World War II, most of his tour of duty being spent in the European theater

CALIFORNIA

Proctor Lecture on Ophthalmology.—Dr Ludwig von Sallmann, director of research in ophthalmology, Columbia University College of Physicians and Surgeons, New York, will give the ninth Francis I Proctor lecture on ophthalmology Sept 30 at the Morrison Auditorium, Golden Gate Park, San Francisco. The subject of his address will be "Responses of Intraocular and Blood Pressure to Electric Stimulation of the Diencephalon"

Dr Smyth Resigns as Dean.—Dr Francis Scott Smyth has resigned as dean of the University of California School of Medicine, San Francisco, but will continue as professor of pediatrics and will also retain a number of other posts in the field of medical education. In regretfully accepting the resignation, president Robert G Sproul gave Dr Smyth much of the credit for anticipating the growing needs of medical education in California, for shaping the modern medical center now rising on the San Francisco campus, and for helping to establish the medical center on the Los Angeles campus. Before coming to the school of medicine as instructor in pediatrics in 1925, Dr Smyth was affiliated with the Boston Children's Hospital, New York Nursery and Child's Hospital, and the St. Louis Children's Hospital. He was promoted to the full professorship and chairmanship of the department of pediatrics in 1932. Dr Smyth will continue in his post on President Eisenhower's Board of Foreign Scholarships, on the committee on international relations of the Association of American Medical Colleges, and on the editorial board of the *A M A American Journal of Diseases of Children*

CONNECTICUT

Course on Pulmonary Disease—Yale University School of Medicine, New Haven, announces a special postgraduate course for practicing physicians, "Management of Chronic Pulmonary Disease," a series of eight weekly teaching conferences. When possible, case material and demonstrations of diagnostic and therapeutic techniques will be presented. The series is arranged to cover in a related sequence the problems of chronic pulmonary disease as encountered by the practicing physician. Sessions will be held on Thursdays, 2:30 to 5 p m, at Farnam Auditorium, Yale New Haven Medical Center, beginning Oct 7. Advance registration is required. Registration fee and tuition will be \$40 for the series. Program and registration form may be obtained from the Assistant Dean of Postgraduate Medical Education, Yale University School of Medicine, 333 Cedar St., New Haven

Physicians are invited to send to this department items of news of general interest for example those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting

GEORGIA

Heart Association Meeting in Savannah.—The Georgia Heart Association will hold its annual meeting and scientific sessions at the General Oglethorpe Hotel in Savannah, Sept. 24 and 25. Speakers at the scientific sessions include

J N Morris London England Coronary Heart Disease—New Diseases for Old Coronary Heart Disease—In Search of Clues
Willis J Potts Chicago Management of Noncyanotic Congenital Heart Disease Management of Cyanotic Congenital Heart Disease
George E Burch New Orleans An Evaluation of the Vectorcardiogram for Clinical Use Clinical Aspects of Venous Pressure Measurements
Thomas P Findley New Orleans Some Homeostatic Functions of the Kidney

These scientific sessions are approved by the Georgia Academy of General Practice for postgraduate hours. Attendance is open to all physicians. There is no registration fee.

ILLINOIS

Hospital News—A reunion of interns and residents from St. Francis Hospital, Evanston, will be held Sept 22 under the chairmanship of Dr Lorne W Mason. The morning session will be devoted to ward walks and surgery observation and the afternoon session to the presentation of scientific papers

Meeting of Anesthesiologists.—The Illinois Society of Anesthesiologists will meet Sept. 21, 8 p m, in the Veterans Administration Research Hospital (333 E Huron St., Chicago, auditorium, 4th floor, east wing). Dr Torsten Gordh, assistant professor and chief anesthetist at Karolinska sjukhuset, University Clinic of Stockholm, Sweden, will present "Problems in Anesthesia in Sweden"

Commission for Handicapped Children—The Governor's Conference on Exceptional Children will be held in Peoria Sept. 24 under the sponsorship of the Illinois Commission for Handicapped Children. The conference is open to all persons concerned with physically or mentally handicapped children, parents, professional workers, and interested citizens. There is no registration fee. The session will include workshops, with focus on prevention-planning for handicapped young persons and sectional meetings on the work of public health in preventing handicapping conditions in children and on the prevention of emotional scars—the role of social service and the use of healthy group experience to prevent maladjustment. Inquiries may be directed to the Commission at 160 N LaSalle St., Chicago 1

Chicago

Hospital News—As part of its 50th anniversary celebration the Mothers Aid of Chicago Lying in Hospital will have a luncheon and fashion show on Sept 22 at the Morrison Hotel at which a check for \$10 000 will be presented to the hospital. The money is part of the \$300 000 pledge that the Mothers Aid is making to the hospital as an anniversary gift

Professors Appointed at Northwestern—The following promotions to the rank of full professor have been announced at Northwestern University Medical School. Dr Ronald R Greene, Evanston, obstetrics and gynecology. Dr Robert E. Stone, nutrition and metabolism. and Dr Willis J Potts, surgery. Dr Greene who joined the faculty in 1937 will occupy the newly established Anna Latham professorship. He is senior attending physician in obstetrics and gynecology at Wesley Memorial Hospital. Dr Stone who is one of the staff of Northwestern's nutrition clinic at the Jefferson Hillman Hospital, Birmingham, Ala., joined the faculty there in 1949 previously having taught at the University of North Carolina School of Medicine, Chapel Hill. Before joining Northwestern's faculty in 1946 Dr Potts taught at Rush Medical College and at the University of Illinois College of Medicine. He is now surgeon-in-chief at Children's Memorial Hospital, Chicago

IOWA

Memorial Scholarships—Dr Anna Bartsch Dunne, Washington D C, has established scholarships at the State University of Iowa, Iowa City, in memory of her parents, to be known as the Henry and Anna Bartsch Endowment, for an annual medical scholarship and an annual medical internship for women. These scholarships, available to residents of Iowa, are similar to the Anna Bartsch Endowment, established several years ago in memory of Dr Dunne's mother at George Washington University in Washington D C.

General Practice Meeting in Des Moines—The Iowa Academy of General Practice will hold its annual meeting at the Hotel Savoy, Des Moines, Sept 22 and 23. Wednesday morning Drs James M. Stickney and Talbert Cooper, Rochester, Minn., will present a symposium on anemia which will be followed by a question and answer period. In the afternoon Dr Cooper will discuss "Treatment of Hodgkin's Disease and Lymphoblastoma" and Dr Stickney "Treatment of Leukemia." A reception and cocktail hour will precede buffet dinner at 7 p. m., during which there will be dedication of one lecture at each annual meeting to the late Dr Ernest E. Shaw. Thursday morning Dr Willard M. Allen, St. Louis, will speak on congenital malformation of the urogenital system, after which Dr Francis D. Murphy, Milwaukee, will present "Management of Hypertension with Special Reference to Newer Methods of Treatment." Dr Murphy will deliver the Dr Ernest E. Shaw lecture, "Acute Renal Insufficiency, Including Acute Toxic Nephrosis," after the 12:15 luncheon, which will be addressed by Countess Maria Pulaski, who will talk about "Experiences as a Spy for Stalin." The sessions will end with presentation of "Cesarean Section—Is an Incidence of 5% Justifiable?" by Dr Allen. The registration fee for nonmembers is \$5, no fee for members.

KENTUCKY

State Medical Meeting in Louisville—The J. W. Thompson Memorial meeting of the Kentucky State Medical Association will be held in the Columbia Auditorium, Louisville, Sept 21 to 23, under the presidency of Dr J. Duffy Hancock, Louisville. The sessions will open at 9:30 a. m. Tuesday with a symposium on physical examination, for which Dr Garnett J. Sweeney, Liberty, will serve as moderator. Dr Robert S. Dyer, Louisville, will deliver the oration in medicine, "Cardiac Pain," at 12 noon. Dr Benton B. Holt, Ashland, will moderate a biopsy panel at 4 p. m. The oration in surgery, "Surgery of Trauma," will be presented at 11 a. m. Wednesday by Dr John E. Haynes, Madisonville, after which the president's luncheon will be held at the Brown Hotel, where Dr Nicholas P. Dallis, Toledo, Ohio, creator of the illustrated feature, "Rex Morgan, M.D.," will speak about "Our Life with Rex Morgan." The following specialty groups will hold their scientific meetings simultaneously during that time: Kentucky Society of Anesthesiologists, Kentucky Obstetrical and Gynecological Society, Kentucky Psychiatric Association, Southeastern Surgical Congress, and the Kentucky chapters of the American College of Chest Physicians, American Academy of General Practice, American Academy of Pediatrics, and American College of Physicians. The guest out-of-state speakers will make presentations during these meetings. Their first presentations during the general scientific sessions include:

Surgical Treatment of Stenotic Valvular Diseases. Thomas J. O'Neill, Philadelphia.

Why the Urinary Antiseptics Fail, William Bromme, Detroit.

Obstetric Miscalculations. John L. Parks, Washington, D. C.

Psychiatry for the General Practitioner. James H. Wall, White Plains, N. Y.

Treatment of Hyperthyroidism. E. Perry McCullagh, Cleveland.

Immunization in Infancy and Childhood. John C. Peterson, Milwaukee.

Low Back Pain and Its Related Conditions—Particularly the Lumbar Disc. Milton C. Cobey, Washington D. C.

Recommended Expansion of Interests in Anesthesiology, Curtiss B. Hickcox, Hartford, Conn.

Diagnosis and Treatment of Diseases of the Breast, Philip Thorek, Chicago.

The president's address will be on Wednesday, 11 a. m. The sessions will conclude with a symposium on interpretation of roentgenograms Thursday, 4 p. m., for which Dr Robert M. Coleman, Hopkinsville, will be moderator. The women's auxiliary will meet simultaneously. The K. S. M. A. golf tournament

will be held at the Audubon Country Club. Physicians and their guests may participate in play Monday, Tuesday, Wednesday, or Thursday, but only the first day of play of any member will count in the contest for tournament prizes.

MAINE

Clinical Session in Portland—The Maine Medical Association will hold its fall clinical session at the Eastland Hotel, Portland, Sept 24 and 25. Included on the program will be the following speakers, sponsored by the Maine Cancer Society: Drs Sidney Farber, Joe V. Meigs, and Richard H. Overholt, Boston; Dr Thomas J. Anglem, Brookline, Mass., and Drs Gordon P. McNeer and Cushman D. Haagensen, New York. The session will open with a dinner meeting Friday at 6:30 p. m. and close with a dinner meeting Saturday evening. A special feature will be a series of round-table conferences during the luncheon Saturday. Saturday will be devoted to papers by the above speakers and others, including Dr Edward B. Benedict, Boston. The Maine Trudeau Society will sponsor a speaker for the Saturday afternoon session, and there will be a meeting of the Maine Trauma Committee of the American College of Surgeons on Saturday, with speakers to be announced. The women's auxiliary will meet during the clinical session.

NEW YORK

Course on Glaucoma—A course on glaucoma with particular emphasis on gonioscopy and study of the anterior angle will be given at the Brooklyn Eye and Ear Hospital, Nov 15 to 17, with instruction in the use of the gonioscens. Material from the glaucoma clinic will be used. Registration is limited to six ophthalmologists. Application and the fee of \$40 may be addressed to Dr Daniel Kravitz, Brooklyn Eye and Ear Hospital, 29 Greene Ave., Brooklyn 38.

New York City

Korean Medal Awarded Dr Rusk—On Aug 2 at a dinner at the Hotel Waldorf-Astoria given by the American-Korean Foundation in honor of Dr Syngman Rhee, president, Republic of Korea, Dr Rhee presented Dr Howard A. Rusk, president of the foundation, with the national medal of the Republic of Korea.

Dr Golden Goes to California—After 32 years with Presbyterian Hospital, Dr Ross Golden will retire as director of the hospital's radiological service and as executive officer of the department of radiology of Columbia University College of Physicians and Surgeons. Dr Golden will move to California, where he has been appointed visiting professor of radiology at the new medical school of the University of California at Los Angeles. First director of the radiological service when it was formed July 1, 1935, Dr Golden is also the college's first professor of radiology. As a testimonial, Columbia University is sponsoring the Ross Golden lectureship, to which more than 400 radiologists and persons in allied fields have contributed.

OHIO

General Practitioners Meet in Columbus—The fourth annual scientific assembly of the Ohio Academy of General Practice will be held Sept 22 and 23 in the Deshler-Hilton Hotel, Columbus. A cordial invitation is extended to all members and friends of the medical profession. The following presentations have been scheduled:

Public Relations in General Practice, Richard C. Miller, Dayton.

Medical Problems of the Athlete, John W. Wilce, Columbus.

Obstetrics in General Practice, Abe Kuhr, Dayton.

Tuberculosis and the General Physician, I. Phillips Frohman, Washington, D. C.

The Patient with a Headache, Howard D. Fabing, Cincinnati.

Poliomyelitis Immunization, S. R. Robbins, Cleveland.

Multiple Sclerosis and Progressive Muscular Dystrophy, Dwight M. Palmer, Columbus.

Medical Education, Stanley E. Dorst, Cincinnati.

The General Physician and the Hospital, Frank C. Sutton, Dayton.

The Human Side of Medicine, Leo H. Bartemeier, Detroit.

Newer Therapeutic Methods in Dermatology, Roy L. Kile, Cincinnati.

Therapeutic Nuggets, Oscar F. Rosenow, Columbus.

Narcotic Enforcement, Mr. Ross B. Ellis, Detroit.

Hearing Impairment in Children, Charles E. Kinney, Cleveland.

Cervical Disc Shoulder, Arm Hand Syndrome, Winchell M. Craig, Rochester, Minn.

PENNSYLVANIA

Memorial to Dr Dixon—A memorial plaque to Dr Samuel G Dixon, first commissioner of health for the Commonwealth of Pennsylvania, was unveiled in the Capitol Building in Harrisburg Aug 19. Dr Walter F Donaldson, Pittsburgh, who succeeded Dr Dixon as president of the Medical Society of the State of Pennsylvania when the latter died in 1918, made the presentation address. Legislation necessary to have the memorial was passed by the Senate and House of Representatives in 1953. The Medical Society of the State of Pennsylvania, instrumental in the creation of the department of health for the commonwealth, cooperated in the plan. The cost of the memorial has been provided by voluntary contributions.

Philadelphia

Meeting of Proctologists—Members of the medical profession are invited to the first fall meeting of the Philadelphia Proctologic Society on Sept. 23, 8 30 p. m., in the headquarters of the Philadelphia County Medical Society (21st and Spruce St.), where a panel meeting will be conducted by the American Board of Proctology. Participating physicians will include Walter A Fansler, Minneapolis, George H Thiele, Kansas City, Mo, Stuart T Ross, Hempstead, N. Y., J Edwin Alford, Buffalo, Garnet W Ault, Washington, D. C., Harry E Bacon, Philadelphia, Louis A Buie and Raymond J Jackman, Rochester, Minn., A W Martin Marino, Brooklyn, Louis E Moon, Omaha, Hyrum R Reichmann, Salt Lake City, Jack G Kerr and Robert J Rowe, Dallas, Texas, and Robert A Scarborough, San Francisco.

RHODE ISLAND

Annual Registration of Physicians—The Rhode Island State Department of Health announces that the division of professional regulation on Sept. 1 began the annual registration of all physicians licensed to practice either medicine or osteopathy in the state. This annual registration is required by a law enacted by the last session of the General Assembly. As application forms have been mailed to all Rhode Island licensed physicians for whom current addresses were available, any physician who failed to receive such a form should contact the division. Licentiate who have moved in or out of the state without notifying the division are urged to send the current address at once. The amended law provides that all medical and osteopathic physicians must register their license certificates with the division of professional regulation on or before Nov. 1 of each year by completing the official registration form and paying the fee of \$1. Registrations filed after Nov. 1 must be accompanied by a \$3 fee. The act permits a physician who does not intend to practice in Rhode Island during any year to request in writing that his or her name be placed on an inactive list, in which case no renewal fee is required as long as the physician remains inactive. A provision is made in the law for a \$25 fine for any person who violates it by failing to register.

TENNESSEE

University News—The University of Tennessee Medical Units Memphis, recently presented a program in emergency surgery and acute injuries that was attended by 20 physicians from Arkansas, Kentucky, Tennessee, Missouri, Alabama, Illinois and Ohio. The course included surgical cases of interest at John Gaston Hospital, teaching faculty of the college of medicine lectures on recent concepts of surgery, and films demonstrating surgical techniques.

Pediatric Seminar—The annual seminar of Le Bonheur Children's Hospital will be held Sept. 22 and 23. Dr Waldo E Nelson, professor of pediatrics, Temple University School of Medicine, Philadelphia, and Dr Orvar Swenson, surgeon in chief, Boston Floating Hospital, will be guest lecturers. The former will present "Acute Respiratory Tract Disturbances in Infancy and Childhood" and "Modern Treatment of Tuberculosis in Children" and the latter "The Diagnosis and Treatment of Anomalies of the Gastrointestinal Tract in Children" and "Surgical Emergencies of the Newborn." Dr Nelson will give clinical case presentations from 10 10 to 11 10 a. m. on both days and Dr Swenson will present clinical cases from 3 50 to 5 p. m.

WASHINGTON

State Medical Meeting in Spokane—The Washington State Medical Association will hold its 65th annual convention at the Davenport Hotel, Spokane, Sept. 19 to 22. Out-of-state speakers and their first presentations include:

Edgar V Allen, Rochester, Minn. Treatment of Essential Hypertension
Harry A Oberhelman, Chicago Surgical Problems in Infancy and Childhood

Donald G Tollefson, Los Angeles Medical and Surgical Treatment of Endometriosis

Ralph K. Ghormley, Rochester, Minn. Backache—Etiology and Treatment of Backache and Sciatic Pain

On Wednesday at 11 30 a. m. at a public relations luncheon "The Personal, Ethical and Professional Obligations of the Physician" will be discussed by Dr Louis J Regan, Los Angeles and "Public Relations" by Mr Leo Brown, A. M. A. Public Relations Director. The annual banquet and dance will be held Tuesday evening. A golf tournament on Monday at the Spokane Country Club and a fishing derby on Lake Pend Oreille have been scheduled. A series of motion pictures produced in Washington State, showing various surgical and medical procedures, will be presented Monday, 1 30 to 4 30 p. m.

WEST VIRGINIA

Meetings for General Practitioners—The West Virginia Academy of General Practice will hold a regional meeting at the Stonewall Jackson Hotel, Clarksburg, on the afternoon of Sept. 19. Presentations will include "Obesity" by Dr Guy F Hollifield, Charlottesville, Va., and "Male Hypogonadism" by Dr Harry F Klinefelter, Baltimore. A panel discussion will follow the presentation of the last paper on the program. An all-day regional meeting is scheduled for Parkersburg, Oct. 10. The program, which will be sponsored by Lederle Laboratories, will be a symposium on office procedures by the general practitioner.

Personal—Dr John C Condry, Charleston, was elected president of the Charleston Executive Club at a meeting held in Charleston early in June. Three other Charleston physicians, Peter A. A. Haley, Howard A Swart and Pat A Tuckwiller, were elected members of the board of directors. Drs Athey R Lutz, Parkersburg and Paul P Warden, Grafton, have been appointed to represent the West Virginia State Medical Association on the board of the new state camp for medically handicapped children. Drs W P Bittinger, Summerlee, and Doff D Daniel, Beckley, have been reappointed by Governor Marland as members of the medical licensing board for the term ending June 30, 1959, both had been appointed members of the board in 1949 after its creation by the legislature early that year. Dr John H Murry, Jenkintown, has been named by the governor as a member of the state board of education for the term ending June 30, 1963. Dr Murry, who has engaged in general practice in McDowell County since 1939, served as treasurer of the McDowell County medical society during 1950 and 1951. Dr Ellery T Drake, Williamson, secretary of the Mingo County Medical Society, has accepted a residency in surgery at Christ Hospital in Cincinnati. Dr Andrew H Henderson Jr, Williamson, has been named secretary-treasurer of Mingo County Medical Society to succeed Dr Drake.

WYOMING

Crippled Children's Conferences—Crippled children's conferences will be held Sept. 24, 8 30 a. m. at Rock Springs in the basement of Memorial Hospital of Sweetwater County and in Kemmerer Sept. 25 at 8 30 a. m. in the Burgoon School at Diamondville. These conferences are being held under the auspices of the Wyoming Department of Public Health and crippled children under the age of 21 are eligible to attend. Parents of children who have not previously attended one of these conferences are requested to contact their family physician first or to write to the Division of Crippled Children, Department of Public Health, Cheyenne, Wyo., so that an estimate of how many will attend can be obtained. Dr Gordon C Whiston, Casper, will be the orthopedist and Dr Paul W Emerson, Cheyenne, pediatric consultant.

GENERAL

Industrial Health Conference—The Portland (Ore.) Chamber of Commerce, in cooperation with the Oregon State Medical Society, the Multnomah County Medical Society, and other agencies interested in the health of industrial workers, will sponsor the first annual Pacific Northwest Conference on Industrial Health, Sept. 20 and 21, at the Hotel Multnomah in Portland. Dr. William J. Sittner, Portland, Ore., is chairman, committee on industrial health of the Oregon State Medical Society, Dr. Kenneth C. Brown, Portland, Ore., chairman of the Multnomah County Society's committee, and Dr. Frank Perlman, Portland, Ore., chairman of the conference.

Van Meter Prize Award—The American Goiter Association again offers the Van Meter prize award of \$300 and two honorable mentions for the best essays submitted on original work related to the thyroid gland. The award will be made at the annual meeting of the association in Oklahoma City, April 28 to 30, 1955, if essays of sufficient merit are presented in competition. The competing essays may cover either clinical or research investigations, should not exceed 3,000 words, and must be in English, and a typewritten double-spaced copy in duplicate must be sent to the secretary, Dr. John C. McClintock, 149½ Washington Ave., Albany, N. Y., not later than Jan. 15, 1955. A place will be reserved on the program of the annual meeting for presentation of the prize award essay by the author.

Multiple Sclerosis Heredity Study—Dr. Harold R. Warner, New York, medical director, National Multiple Sclerosis Society, reports that about 35 pairs of twins from the United States and Canada responded to the recent appeal for identical twins afflicted with multiple sclerosis (THE JOURNAL, July 24, 1954, page 1174). As a result, preliminary verification for research into the possible hereditary and environmental causes of the crippling disease is now under way. The society plans to commence its research project as soon as sufficient data on the volunteer twins have been amassed and examples of twins have been selected to meet the requirements of the proposed study. Data will be sifted and corroborated to make sure that (1) the twins are identical and (2) one, or both, has multiple sclerosis. For purposes of the planned research, the "ideal" twins would be those sets in which one member has multiple sclerosis and the other has not. Both would be studied to try to determine factors that may have been responsible for the disease in the afflicted twin. The society's appeal for identical twins is continuing. Volunteers are asked to contact the National Multiple Sclerosis Society, 270 Park Ave., New York 17.

Annual Meeting of Roentgen Ray Society—The 55th annual meeting of the American Roentgen Ray Society will be held at the Shoreham Hotel, Washington, D. C., Sept. 21 to 24. After the address of welcome by Dr. Preston A. McClendon, president, Medical Society of the District of Columbia, Tuesday at 8:30 a. m., Dr. Joshua C. Dickinson, Tampa, Fla., will be installed as president and will deliver his inaugural address. Tuesday at 8:30 p. m. Dr. Dickinson will present a medal to Dr. Edward L. Jenkinson, Chicago, who will deliver the Caldwell lecture, "Pyloric Antrum of the Stomach." The following symposiums have been scheduled:

Carcinoma of the Lung, Merrill C. Sosman, Boston, moderator
Blood Dyscrasias, Lymphoma Leukemia Group, H. Dabney Kerr, Iowa City, moderator
Uses of Radioactive Isotopes in Medical Diagnosis and Research, Edith H. Quimby, Sc. D., New York, moderator
Neonatal Respiratory Distress Syndromes, Edward B. D. Neuhauser, Boston, moderator
Inflammatory Lesions of Gastrointestinal Tract, Fred J. Hodges, Ann Arbor, Mich., moderator

Cocktails at 7 p. m. Thursday will precede the annual banquet and the presentation of scientific awards. The annual golf tournament for the Willis F. Manges trophy will be held Monday at the Manor Country Club and will be followed by the golf dinner.

American Medical Writers' Association—The American Medical Writers' Association will hold its 11th annual meeting Sept. 24 at the Hotel Sherman, Chicago. Dr. Jacob E. Reisch, Springfield, Ill., president of the association, will open the symposium and panel discussion, "Collegiate Education in Medical Journal-

ism and Writing," for which Dr. Richard M. Hewitt, Rochester, Minn., will serve as moderator. I. W. Cole, M. S., Urbana, Ill., and Earl F. English, Ph. D., and Dr. Roscoe L. Pullen, Columbia, Mo., will speak on the new medical journalism and writing program at the universities of Illinois and Missouri. Panel discussion will follow presentation of "Medical Journalism Scholarship Fund and a Traveling Lectureship for the American Medical Writers' Association" by Dr. Harold Swanberg, Quincy, Ill. In the afternoon there will be a symposium and panel discussion on medical writing, with Dr. Clayton G. Loosli, Chicago, as moderator and Drs. I. Phillips Frohman, Washington, D. C., Sidney W. Scorse, Joplin, Mo., Waltman Walters, Rochester, Minn., H. Ernest MacDermot, Montreal, Canada, Alexander B. Gutman, New York, Harry A. Oberhelman, Chicago, and Russell L. Cecil, New York, as collaborators. A fellowship hour at 7 p. m. will precede the dinner, at which awards will be presented and Dr. Jonathan Forman, Columbus, Ohio, will discuss "Newer Concept of Disease (Curative Versus Creative Medicine)."

Mississippi Valley Medical Society—The Mississippi Valley Medical Society will hold its 19th annual meeting at the Hotel Sherman, Chicago, Sept. 22 to 24, under the presidency of Dr. Norris J. Heckel, Chicago. The program will include panel discussions on hypertension, obstetrics and gynecology, peptic ulcers, endocrinology, and diseases of the heart and blood vessels. An informal evening fellowship hour, banquet, and entertainment have been scheduled for Thursday, when the speakers will be Arch Ward, Chicago, sports editor, *Chicago Tribune*, Dr. Arkell M. Vaughn, Chicago, president, Illinois State Medical Society, Dr. Harold E. Petersen, St. Joseph, Mo., president, Missouri State Medical Association, and Dr. Lonnie A. Coffin, Farmington, Iowa, president-elect, Iowa State Medical Society. A feature of the meeting will be the nationwide closed circuit telecast, arranged by the American College of Physicians, in which a symposium on management of hypertension will be presented. This telecast will be shown at both the Sheraton Hotel and the Hotel Sherman Thursday, from 5 to 6 p. m. The society invites all doctors of medicine to attend its Thursday afternoon and evening program, for which there will be no registration fee. Dr. Warren H. Cole, Chicago, will speak on acute gall-bladder diseases at 2 p. m. and Dr. Waltman Walters, Rochester, Minn., on errors in diagnosis and treatment of biliary tract lesions at 2:30 p. m., after which a panel on peptic ulcer will be presented.

Southwestern Surgical Congress—The Southwestern Surgical Congress will convene for its 6th annual meeting Sept. 20 to 22 at the Skirvin Hotel, Oklahoma City. Dr. Philip B. Price, Salt Lake City, will deliver the president's address Tuesday at 3 p. m. Panel discussions will be held daily from 2 to 3 p. m., as follows: Monday, "Abdominal Anomalies of Childhood," Dr. John M. Waugh, Rochester, Minn., moderator; Tuesday, "Thromboembolic Phenomena," Dr. Alton Ochsner, New Orleans, moderator; and Wednesday, "Urological Indications for Pelvic Surgery," Dr. Zeph J. R. Hollenbeck, Columbus, Ohio, moderator. A one hour motion picture presentation will be offered by the department of surgery of each of the following medical schools in the congress area:

Baylor University College of Medicine, Houston, Texas: Surgical Considerations of Disease of the Aorta
University of Oklahoma School of Medicine, Oklahoma City: Inguinal Hernia—Anatomical Considerations, Statistical Analysis and Surgical Technique
Southwestern Medical School of the University of Texas at Dallas: Effects of Various Shock States and Their Treatment on Pulmonary Function, Hepatic Function, Renal Function

Twenty-seven scientific papers and case reports will be presented by members and member-sponsored speakers. Speakers from previous sessions will participate in a question and answer period after the luncheon each day. There will be a registration fee of \$10 for nonmember physicians only, with the following exceptions: residents, interns, military personnel, and fellows of the Southeastern Surgical Congress. No registration fee will be charged fellows of the congress, ladies, and program participants.

Railway Surgeons Meeting in Sun Valley—The 51st annual meeting of the Western Association of Railway Surgeons will convene Sept. 23 to 25 at the Lodge, Sun Valley, Idaho. At 9 a. m. Thursday Dr. W. Joseph McMartin, Omaha, will deliver

the president's address, after which Dr Joseph F. Gross, Omaha, will discuss "Diagnosis and Treatment of Painful Shoulder" and Dr Donald R. Pratt, San Francisco, will give an illustrated lecture, "Treatment of Mass Injuries to the Hand." A social hour will precede the banquet, 7 p. m., at which Dr. McMartin will serve as toastmaster and Mr. Arthur Stoddard, Omaha, president, Union Pacific Railroad, will be guest speaker. The Friday program will open at 9:15 a. m. with discussion of newer concepts of shock by Dr. Curtis E. Smith, San Francisco, and Dr. George A. Collett, Elko, Nev., followed by an illustrated talk on malignant lesions of the skin by Dr. Warren A. Bowersox, St. Louis, and "Use of Tantalum Mesh in Hernia Repair," with motion pictures, by Dr. Chester C. Guy, Chicago. After presentation of "Acute Medical Emergencies" by Drs. R. Emmet Allen and William E. Trezise, San Francisco, K. A. Carney, Chicago, will have as his topic "Claims, Settlements, Lawsuits, Etc." At 9:30 a. m. Saturday, "Radiological Diagnosis of Ulcerative Colitis" will be presented by Drs. Francis L. Simonds, John H. Brush, and G. Prentiss McArdle, Omaha. Dr. Bradford Simmons, San Francisco, and Dr. Earl A. Connolly, Omaha, will deliver "Gastric Resection for Peptic Ulcerations—Report on 500 Cases." The sessions will close with "Peptic Ulcer—Diagnosis and Management" by Dr. Claude P. Callaway, San Francisco.

Prevalence of Poliomyelitis—According to the National Office of Vital Statistics, the following number of reported cases of poliomyelitis occurred in the United States and its territories and possessions in the weeks ended as indicated:

Area	Aug 21, 1954		Aug 22, 1953 Total
	Paralytic Type	Total Cases Reported	
New England States			
Maine	10	21	40
New Hampshire		9	6
Vermont	1	4	6
Massachusetts	21	67	31
Rhode Island		4	13
Connecticut	8	8	20
Middle Atlantic States			
New York	39	103	175
New Jersey	23	47	60
Pennsylvania		72	62
East North Central States			
Ohio	25	150	207
Indiana	24	47	44
Illinois	75	132	190
Michigan	70	159	212
Wisconsin	6	35	49
West North Central States			
Minnesota	24	53	193
Iowa	31	72	64
Missouri	17	40	35
North Dakota		11	14
South Dakota		7	12
Nebraska	17	35	18
Kansas	6	44	33
South Atlantic States			
Delaware	1	1	4
Maryland	3	9	41
District of Columbia	3	6	3
Virginia	15	30	64
West Virginia	9	16	27
North Carolina	24	67	53
South Carolina	4	13	13
Georgia	20	48	15
Florida	14	65	12
East South Central States			
Kentucky	25	47	13
Tennessee	4	22	29
Alabama	11	17	16
Mississippi	9	25	13
West South Central States			
Arkansas	13	17	17
Louisiana	15	31	16
Oklahoma	5	57	29
Texas	31	159	65
Mountain States			
Montana	1	6	15
Idaho		7	3
Wyoming	2	15	—
Colorado	8	23	15
New Mexico	1	7	5
Arizona	3	7	3
Utah		22	2
Nevada		6	4
Pacific States			
Washington	6	16	12
Oregon	10	15	10
California	159	255	15
Territories and Possessions			
Alaska		19	—
Hawaii		3	—
Puerto Rico			—
Total	515	2,000	2,000

CORRECTION

Penicillin in Prophylaxis of Recurrent Rheumatic Fever.—In table 2, page 1467, in THE JOURNAL of Aug 21, 1954, under the column entitled "Initially High" the figure at the bottom of this column should be 1 instead of 33.

MEETINGS

AMERICAN MEDICAL ASSOCIATION Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary

1954 Clinical Meeting, Miami, Florida, Nov. 29-Dec. 2

1955 Annual Meeting, Atlantic City, N. J., June 6-10

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2

1956 Annual Meeting, Chicago, June 11-15

1956 Clinical Meeting, Seattle, Nov. 27-30

ACADEMY OF PSYCHOSOMATIC MEDICINE, New York, Oct. 8-9. Dr. Ethan Allan Brown, 75 Bay State Road, Boston 15, Secretary

AMERICAN ACADEMY FOR CEREBRAL PALSY, Williamsburg Inn, Williamsburg, Va., Nov. 4-6. Dr. Harry E. Barnett, 116 South Michigan Blvd., Chicago 3, Secretary

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, The Waldorf Astoria, New York, Sept. 19-24. Dr. W. L. Benedict, 100 First Avenue Bldg., Rochester, Minn., Executive Secretary

AMERICAN ACADEMY OF PEDIATRICS, Palmer House, Chicago, Oct. 4-7. Dr. E. H. Christopherson, 610 Church St., Evanston 11, Secretary

AMERICAN ASSOCIATION OF MEDICAL CLINICS, Jung Hotel, New Orleans, Nov. 12-14. Dr. Arthur H. Griep, 420 Cherry St., Evansville, Ind., Secretary

AMERICAN ASSOCIATION OF MEDICAL RECORD LIBRARIANS, Sheraton-Cadillac Hotel, Detroit, Oct. 4-8. Miss Doris Gleason, 510 N. Dearborn St., Chicago 10, Executive Director

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Hotel Claridge, Atlantic City, N. J., Nov. 11-13. Dr. James K. Stack, 700 North Michigan Blvd., Chicago 11, Secretary

AMERICAN CANCER SOCIETY, Hotel Roosevelt, New York, Oct. 17-24. Dr. Charles S. Cameron, 47 Beaver St., New York 4, Medical Director

AMERICAN CLINICAL AND CLIMATOLOGICAL ASSOCIATION, Lake Placid Club, Lake Placid, N. Y., Oct. 14-16. Dr. Marshall N. Fulton, 124 Waterman St., Providence 6, R. I., Secretary

AMERICAN COLLEGE OF GASTROENTEROLOGY, The Shoreham, Washington, D. C., Oct. 25-30. Dr. A. Xerxes Rossier, 33 West 60th St., New York 23, Secretary

AMERICAN DENTAL ASSOCIATION, Miami, Fla., Nov. 8-11. Dr. Harold Hillenbrand, 222 East Superior St., Chicago 11, General Secretary

AMERICAN FRACTURE ASSOCIATION, Shamrock Hotel, Houston, Texas, Oct. 11-14. Dr. H. W. Wellmerling, 626 Griesheim Bldg., Bloomington 11, Secretary-General

AMERICAN HEART ASSOCIATION, Jung Hotel, New Orleans, Oct. 26-30. Mr. Irving Hexter, 44 East 23rd St., New York 10, Secretary

AMERICAN MEDICAL WRITERS ASSOCIATION, Hotel Sherman, Chicago, Sept. 24. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary

AMERICAN OTORHINOLARYNGOLOGIC SOCIETY FOR PLASTIC SURGERY, The Waldorf Astoria, New York, Sept. 19. Dr. Louis J. Feit, 66 Park Ave., New York, Secretary

AMERICAN PUBLIC HEALTH ASSOCIATION, Memorial Auditorium, Buffalo, N. Y., Oct. 11-15. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary

AMERICAN ROENTGEN RAY SOCIETY, Shoreham Hotel, Washington, D. C., Sept. 21-24. Dr. Barton R. Young, Germantown Hospital, Philadelphia 44, Secretary

AMERICAN SOCIETY OF ANESTHESIOLOGISTS, Netherland Plaza Hotel, Cincinnati, Oct. 25-30. Dr. J. Earl Remlinger, Jr., 188 West Randolph St., Chicago 1, Secretary

AMERICAN SOCIETY FOR THE STUDY OF ARTERIOSCLEROSIS, Sheraton Hotel, Chicago, Oct. 31-Nov. 1. Dr. O. J. Pollak, P. O. Box 225, Dove, Del., Secretary

AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE, Hotel Peabody, Memphis, Tenn., Nov. 4-6. Dr. John E. Lash, Jr., Dept. of Pathology, School of Public Health, Univ. of North Carolina, Chapel Hill, N. C., Secretary

AMERICAN THERAPEUTIC SOCIETY, The Chase Hotel, St. Louis, Nov. 4-7. Dr. Oscar B. Hunter, 915 North 4th St., St. W., Washington, D. C., Secretary

ASSOCIATION OF AMERICAN MEDICAL COLLEGES, French Li & Sons Hotel, French Li & Sons, Oct. 17-20. Dr. Dean F. Smiley, 165 N. Wabash Ave., Chicago 1, Secretary

- ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS OF AMERICA**, Royal York Hotel Toronto Canada, Oct 12-14 Dr Henry B Kirkland, P O Box 594 Newark, N J Secretary
- CALIFORNIA ACADEMY OF GENERAL PRACTICE** Statler Hotel Los Angeles, Oct 24-27 Mr Wm W Rogers, 450 Mission St, San Francisco, Executive Secretary
- CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNCOLOGISTS**, Hotel Jefferson St Louis Oct 7-9 Dr Harold I Gaine, Suite 602, 116 S Michigan Ave Chicago 3, Secretary
- CENTRAL SOCIETY FOR CLINICAL RESEARCH** Drake Hotel Chicago, Oct 29-30 Dr Robert H Ebert 950 First 59th St, Chicago 37, Secretary
- CLINICAL ORTHOPAEDIC SOCIETY** Sheraton Hotel Chicago Oct 7-9 Dr John H Moe 825 Nicollet Ave, Minneapolis, Secretary
- COLORADO STATE MEDICAL SOCIETY** Broadmoor Hotel Colorado Springs, Sept 21-24 Mr Harvey T Sethman 835 Republic Building Denver 2 Executive Secretary
- CONGRESS OF NEUROLOGICAL SURGEONS** The Waldorf Astoria New York, Nov 4-6 Dr Blind W Cannon 1092 Madison Ave Memphis Tenn, Secretary
- DELAWARE MEDICAL SOCIETY OF DOVER** Oct 11-13 Dr Norman L Cannon 1205 Delaware Ave Wilmington Executive Secretary
- DISTRICT OF COLUMBIA MEDICAL SOCIETY OF THE** Hotel Shoreham Washington D C Nov 1-3 Mr Theodore Wiprud, 1718 M St N W, Washington D C, Secretary
- GULF COAST CLINICAL SOCIETY**, Edgewater Park, Miss, Oct 21-22 Dr F C Minkler Pascagoula Miss, Secretary
- INDIANA STATE MEDICAL ASSOCIATION** Murat Temple Indianapolis Oct 26-28 Mr James A Waggener 23 East Ohio St Indianapolis 4, Executive Secretary
- INDUSTRIAL HEALTH CONFERENCE (Houston)** Shamrock Hotel Houston Tex, Sept 23-25 Dr Sidney Schnur, 411 Medical Arts Bldg Houston 2 Tex Chairman
- INTERSTATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA** Municipal Auditorium Minneapolis Nov 1-4 Dr Erwin R Schmidt, 1300 University Ave Madison 6 Wis Secretary
- INTER SOCIETY CYTOLOGY COUNCIL** Statler Hotel Boston Nov 12-13 Dr John B Graham, 32 Fruit St Boston Chairman Program Committee
- KANSAS CITY SOUTHWEST CLINICAL SOCIETY** Kansas City Mo Oct 4-7 Dr Ira C Layton 306 E Twelfth St Kansas City 6E Mo Secretary
- KENTUCKY STATE MEDICAL ASSOCIATION** Brown Hotel Louisville, Sept 21-23 Dr Bruce Underwood, 620 S Third St Louisville 2 Secretary
- MICHIGAN STATE MEDICAL SOCIETY** Sheraton Cadillac Hotel Detroit Sept 29 Oct 1 Dr L Fernald Foster 606 Townsend St, Lansing 15, Secretary
- MIDWESTERN SECTION OF AMERICAN FEDERATION FOR CLINICAL RESEARCH**, Thorne Hall Auditorium Northwestern University Medical Campus Chicago Oct 28 Dr R L Grissom Univ of Nebraska College of Medicine, Dept of Internal Medicine Omaha 5 Secretary
- MISSISSIPPI VALLEY MEDICAL SOCIETY** Hotel Sherman, Chicago Sept 22-24 Dr Harold Swanberg, 510 Maine St, Quincy, Ill, Secretary
- NATIONAL ASSOCIATION FOR MENTAL HEALTH**, Hotel Statler New York, Oct 23-25 Mr Robert M Heininger, 1790 Broadway, New York 19, Executive Director
- NATIONAL PROCTOLOGIC ASSOCIATION**, Maryland Hotel Chicago Oct 7-9 Dr George E Mueller, 59 E Madison St, Chicago 2, Executive Secretary
- NATIONAL REHABILITATION ASSOCIATION** Baltimore Oct 24-27 Mr E B Whitten, 514-16 Arlington Bldg, 1025 Vermont Ave, N W, Washington, D C, Executive Director
- NEW HAMPSHIRE MEDICAL SOCIETY** Mt Washington Hotel, Bretton Woods, Oct 3-5 Dr W H Butterfield 18 School St, Concord, Secretary
- NORTH TEXAS-SOUTHERN OKLAHOMA FALL CLINICAL CONFERENCE** Wichita Falls, Tex, Sept 22 Dr C H Wilson, 1300 Eighth St, Wichita Falls Tex, Chairman
- OKLAHOMA CITY CLINICAL SOCIETY CONFERENCE**, Oklahoma City Oct 25-28 Dr Charles E Leonard, 512 Medical Arts Bldg, Oklahoma City 2, Secretary
- OMAHA MID-WEST CLINICAL SOCIETY** Paxton Hotel Omaha Oct 25-28 Dr Louis E Moon, 1031 Medical Arts Bldg, Omaha 2, Secretary
- OREGON STATE MEDICAL SOCIETY**, Heathman Hotel, Portland, Oct 13-16 Dr Charles E Littlehales, 1115 S W Taylor St, Portland 5, Executive Secretary
- PENNSYLVANIA, MEDICAL SOCIETY OF THE STATE OF**, Bellevue-Stratford Hotel, Philadelphia, Oct 17-22 Dr Harold B Gardner, 230 State St, Harrisburg, Secretary
- REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS**
- Midwest, Indianapolis, Claypool Hotel Oct 9 Dr Wendell A Shullenberger, 3470 Central Ave, Indianapolis, Chairman
- New England, Hartford, Conn, Oct 22 Dr John C Leonard, 80 Seymour St, Hartford, Conn, Chairman
- New Jersey, Newark, Nov 3 Dr Edward C Klein Jr, 6 South Kingman Rd, South Orange, N J, Governor
- Southeastern, Edgewater Gulf Hotel, Edgewater Park, Miss, Oct 15-16 Dr E Dice Lineberry, 1529 N 25th St, Birmingham 4, Ala, Governor
- SOUTHERN MEDICAL ASSOCIATION**, St Louis, Nov 8-11 Mr C P Loran, 1020 Empire Bldg, Birmingham 3, Ala, Secretary
- SOUTHERN SOCIETY OF CANCER CYTOLOGY**, St Louis, Nov 8-11 Dr J Ernest Ayre, 1155 N W 14th St, Miami, Fla, Secretary
- SOUTHWESTERN SURGICAL CONGRESS** Skirvin Hotel, Oklahoma City, Sept 20-22 Dr C R Rountree, 1227 Classen Drive Oklahoma City 3, Secretary
- THE CONSTANTINIAN SOCIETY**, The Broadmoor, Colorado Springs, Colo., Sept 26-29 Dr C F Shook, P O Box 1035 36, Toledo 1, Ohio, Secretary
- VERMONT STATE MEDICAL SOCIETY**, Mt Washington Hotel, Bretton Woods, N H, Oct 3-5 Dr James P Hammond, 337 South St, Bennington, Secretary
- VIRGINIA, MEDICAL SOCIETY OF**, Shoreham Hotel, Washington, D C, Oct 31 Nov 3 Mr Robert I Howard, 1105 W Franklin St, Richmond, Executive Secretary
- WESTERN ASSOCIATION OF RAILWAY SURGEONS** Sun Valley Idaho, Sept 23-25 Dr Leo L Stanley, 1322 Fifth Ave, San Rafael, Calif, Secretary
- WISCONSIN, STATE MEDICAL SOCIETY OF**, Hotel Schroeder, Milwaukee Oct 5-7 Mr Charles H Crownhart, 704 E Gorham St, Madison 3, Secretary

FOREIGN AND INTERNATIONAL

- COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE**, Royal Festival Hall London, England June 21-25, 1955 Mr J H Harley Williams, Tavistock House North Tavistock Square, London, WC1, England, Secretary General
- CONFERENCE OF INTERNATIONAL UNION AGAINST TUBERCULOSIS** Madrid, Spain Sept 26 Oct 2, 1954 Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid Spain
- CONFERENCE OF THE SOLVAY INSTITUTE OF SOCIOLOGY** Université Libre de Bruxelles, Brussels, Belgium Oct 18-23, 1954 For information write Assistant to the Secretary A Dorsinfaing Smets, Solvay Institute of Sociology, Parc Leopold, Brussels 4, Belgium
- CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY** London, England July 18-23 1955 Dr C B Frisby, National Institute of Industrial Psychology 14 Welbeck St, London, W1, England President.
- CONGRESS OF THE INTERNATIONAL DIABETES FEDERATION**, Cambridge, England, July 4-8, 1955 Mr James G L Jackson, 152 Harley St, London W1, England, Executive Secretary General
- CONGRESS OF INTERNATIONAL SOCIETY OF MEDICAL HYDROLOGY**, Vichy, Paris, and Enghien, France, Sept 24-27, 1954 Dr Francon, 55, rue des Mathurins, Paris 8^e, France Secretary-General
- HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE**, Bournemouth, England April 26-29 1955 Mr P Arthur Wells, Royal Sanitary Institute 90 Buckingham Palace Road, London, S W 1, England Secretary
- INTER AMERICAN CONGRESS OF RADIOLOGY**, Shoreham Hotel Washington, D C U S A, April 24-29 1955 Dr Eugene P Pendergrass, 3400 Spruce St, Philadelphia 4, Pa, U S A, Secretary General
- INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS**, Universidad Mayor de San Marcos de Lima Lima, Peru S A, Jan 11-14, 1955 Dr Michael L Mason, 40 East Erie St Chicago 11, Ill, U S A, Secretary
- INTERNATIONAL ANATOMICAL CONGRESS**, Paris, France, July 25-30, 1955 Prof Gaston Cordier, 45, rue des Saints Pères, Paris 6^e, France, Secretary-General
- INTERNATIONAL ANESTHESIA RESEARCH SOCIETY**, Ambassador Hotel Los Angeles, Calif, U S A, Oct 10-14 1954 For information write Dr T H Seldon, 102 110 Second Avenue S W Rochester Minn U S A
- INTERNATIONAL CONGRESS OF BIOCHEMISTRY** Brussels, Belgium, Aug 1-6, 1955 Prof C Liebecq, 17 Place Delcour, Liege Belgium, Secretary General
- INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY**, Lausanne, Switzerland, May 26-31, 1955 Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary-General
- INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST**, Barcelona, Spain Oct 4-8, 1954 Mr Murray Kornfeld, 112 East Chestnut St, Chicago 11, Ill, U S A, Executive Secretary
- INTERNATIONAL CONGRESS OF HYDATID DISEASE** Madrid, Spain Sept 25-30 1954 Dr Jesus Calvo Melendro, Hospital Provincial Soria, Spain Secretary-General
- INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY**, Luxemburg Luxembourg, Nov 7-12 1954 Colonel A R Vernengo Direccion General de Sanidad Militar, Pozos 2045, Buenos Aires Argentina S A, Secretary-General
- INTERNATIONAL CONGRESS OF PLASTIC SURGERY** Stockholm Sweden Aug 1-4, 1955, and Uppsala, Sweden, Aug 5, 1955 Dr Tord Skoog Uppsala Sweden, General Secretary
- INTERNATIONAL FEDERATION OF MEDICAL STUDENT ASSOCIATIONS** Rome Italy, Oct 1-5, 1954 Mr Jorgen Falck Larsen 12 Kristianiagade, Copenhagen Ø, Denmark, General Secretary

INTERNATIONAL HOSPITAL CONGRESS Lucerne Switzerland May 30-June 3 1955 Capt. J E Stone International Hospital Federation 10 Old Jewry London EC2 England Hon Secretary

INTERNATIONAL SURGICAL CONGRESS Geneva Switzerland May 23-26 1955 Dr Max Thorek 1516 Lake Shore Drive Chicago Illinois U S A Secretary-General

JAPAN MEDICAL CONGRESS Kyoto University and Kyoto Prefectural Medical College Kyoto Japan April 15 1955 Dr Mitsuharu Goto University Hospital Medical Faculty of Kyoto University Kyoto Japan Secretary-General

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE Lima Peru S A Feb 14-19 1955 Dr Cassius Lopez de Victoria 176 East 71st St New York 21 N Y U S A Executive Director

MEDICAL JOURNALISM MEETING Exposition Universelle Romaine Rome Italy Sept 30 1954 Dr H Clegg B.M.A House Tavistock Square London WC1 England Secretary

PAN AMERICAN ACADEMY OF GENERAL PRACTICE, Lima Peru S A Feb 11-25 1955 Dr Arturo Martinez, 54 East 72nd St. New York 21 N Y U S A Secretary

PAN AMERICAN HOMEOPATHIC MEDICAL CONGRESS Hotel Gloria Rio de Janeiro Brazil S A Oct 2-13 1954 Dr Paul S Schantz, 103 West Main St Ephrata Pa U S A Executive Secretary

PAN PACIFIC SURGICAL CONGRESS Honolulu Hawaii Oct 7-18 1954 Dr F J Pinkerton Suite 7 Young Bldg Honolulu 13 Hawaii Director General

WORLD MEDICAL ASSOCIATION Rome Italy Sept. 26-Oct. 2, 1954 Dr Louis H Bauer 345 East 46th St New York 17 N Y U S A Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ARIZONA * *Examination and Reciprocity* Phoenix Oct. 13-15 Jan 12-14 1955 and April 13-15 1955 Ex Sec Mr Robert Carpenter 401 Security Bldg., Phoenix.

ARKANSAS * *Examination* Little Rock, Nov 4-5 Sec Dr Joe Verser Harrisburg

CALIFORNIA *Written* Sacramento Oct 18-21 *Oral* Los Angeles Nov 20 *Oral and Clinical Examination for Foreign Medical School Graduates* Sec Dr Louis E Jones 1020 N Street Sacramento

COLORADO * *Reciprocity* Denver Oct. 13 *Examination* Denver Dec 7-8 Exec Sec Mrs B H Hudgens 831 Republic Bldg. Denver 2

CONNECTICUT * *Examination* Hartford Nov 9-10 Sec Dr Creighton Barker 160 St Roman St. New Haven

DELAWARE *Examination and Reciprocity* Dover Jan 11-13 Sec Dr J S McDaniel 229 So State St. Dover

DISTRICT OF COLUMBIA * *Examination* Washington Nov 8-9 Deputy Director Mr Paul Foley Department of Occupations and Professions 1740 Massachusetts Ave NW Washington

IDAHO *Examination and Endorsement* Boise Jan. 10-12. Exec Sec Mr Armand L. Bird 364 Sanna Bldg Boise

ILLINOIS *Examination and Reciprocity* Chicago Oct. 5-7 Supt. of Registration Mr Frederic B Selcke Capitol Bldg Springfield

IOWA * *Examination* Des Moines Dec. 6-8 Exec Sec. Mr Ronald V Saf New State Office Bldg Des Moines 19

KANSAS *Examination and Reciprocity* Topeka Dec 8-9 Sec. Dr O W Davidson 872 New Brotherhood Bldg Kansas City

KENTUCKY *Examination* Louisville Dec 6-8 Asst. Sec Mr R. F Dixon 620 S 3rd St. Louisville

MAINE *Examination and Endorsement* Portland Nov 9-10 Sec Dr Adam P Leighton 192 State St Portland

MASSACHUSETTS *Examination* Boston Jan 18-21 Sec Dr Robert C Cochrane Room 37 State House Boston

MICHIGAN * *Examination* Lansing Oct. 13-15 Sec Dr J Earl McIntyre 118 Stevens T Mason Bldg Lansing

MINNESOTA * *Examination and Reciprocity* Minneapolis Oct 19-21 Sec Dr E. M. Jones 230 Lowry Medical Arts Bldg St. Paul 2

MISSISSIPPI *Reciprocity* Jackson December Asst. Sec Dr R. Whitfield Old Capitol Jackson 113

MONTANA *Examination and Reciprocity* Helena Oct 4 Sec Dr S A. Cooney 214 Power Block Helena

NEBRASKA * *Examination* Omaha June Director Bureau of Examining Boards Mr Husted K. Watson State Capitol Bldg Room 1009 Lincoln 9

NEVADA * *Examination and Endorsement* Reno Oct 5 Sec Dr G H Ross 112 Curry St Carson City

NEW JERSEY *Examination* Trenton Oct. 19-22 Sec Dr E S Hallinger 28 W State St Trenton

NEW MEXICO * *Examination and Reciprocity* Santa Fe Oct. 11-12 Sec Dr R C Derbyshire 227 E Palace Ave Santa Fe

NORTH CAROLINA *Endorsement* Rocky Mount, Oct. 4 Sec Dr Joseph J Combs Professional Building Raleigh

NORTH DAKOTA *Examination* Grand Forks Jan 5-8 *Reciprocity* Grand Forks Jan 8 Sec Dr C J Glaspel Grafton

OHIO *Examination* Columbus Dec 13-15 *Reciprocity* Columbus Oct. 4 Sec Dr H M Platter Wyandotte Bldg Columbus 15

OREGON * *Examination, and Reciprocity* Portland Oct. 14-16 Exec. Sec Mr Howard I Bobblitt, 609 Failing Building Portland 4

RHODE ISLAND * *Examination* Providence Oct. 7-8 Administrator of Professional Regulation Mr Thomas B Casey 366 State Office Bldg. Providence

SOUTH CAROLINA *Examination and Reciprocity* Columbia Nov 8 Sec Mr N B Heyward 1329 Blandling St Columbia

TENNESSEE * *Examination* Memphis Sept. 29-30 Sec Dr H. W Qualls 1635 Exchange Bldg Memphis

TEXAS * *Examination and Reciprocity* Fort Worth Dec 2-4 Sec Dr M H Crabb 1714 Medical Arts Bldg Fort Worth 2.

UTAH *Reciprocity* Salt Lake City Nov 16 Director Department of Registration Mr Frank E Lees 324 State Capitol Bldg. Salt Lake City

VIRGINIA *Examination* Richmond Dec 9-11 *Reciprocity* Richmond Dec 8 Address Board of Medical Examiners 631 First St., SW Roanoke

WEST VIRGINIA *Examination* Charleston Oct. 11 Sec Dr Newman H Dyer State Office Bldg. No 3 Charleston 5

WISCONSIN * *Reciprocity* Madison Oct. 15 Sec. Dr Thomas W Tormey Room 1140 State Office Bldg Madison 2

WYOMING *Examination and Reciprocity* Cheyenne Oct. 4 Sec Dr Franklin D Yoder State Office Bldg., Cheyenne

ALASKA * On application Sec Dr W M. Whitehead 172 South Franklin St. Juneau.

GUAM The Commission on Licensure will meet whenever a candidate appears or submits his credentials Sec Dr Benedict Cooper Agana.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA On application. Juneau or other towns in Territory as decided by Board. *Reciprocity* On application Sec. Dr C. Earl Albrecht Box 1931 Juneau

ARKANSAS *Examination* Little Rock, Oct 5-6 Sec. Dr Louis E Gebauer 1002 Donaghey Bldg., Little Rock.

DISTRICT OF COLUMBIA *Examination* Washington Oct. 18-19 Deputy Director Department of Occupations and Professions Mr Paul Foley 1740 Massachusetts Ave NW Washington

FLORIDA *Examination* Gainesville, Nov 6 Sec Mr M W Emmel Box 340 University of Florida, Gainesville

IOWA *Examination* Des Moines Oct. 12 Sec Dr Ben H. Peterson Coe College Cedar Rapids

MICHIGAN *Examination* Detroit and Ann Arbor Oct. 8-9 Sec., Mrs Anne Baker Mason Bldg., Lansing 2

NEBRASKA *Examination* Omaha Oct. 5-6 Director Mr Husted K. Watson Room 1009 State Capitol Bldg. Lincoln 9

NEVADA *Examination* Reno Oct 5 Sec Dr Donald G Cooney Box 9005 University of Nevada Reno

NEW MEXICO *Examination* Santa Fe Oct. 17 Sec Mrs Marguerite Cantrell P O Box 1522, Santa Fe

OKLAHOMA Oklahoma City April 8-9 Sec., Dr C Gallaher 813 Braniff Bldg Oklahoma City

OREGON *Examination* Portland Dec 4 Sec Mr Charles D Byrne State Board of Higher Education Eugene

RHODE ISLAND *Examination* Providence Nov 10 Administrator of Professional Regulation, Mr Thomas B Casey 366 State Office Bldg Providence

TENNESSEE *Examination* Memphis Sept. 20-21 Sec., Dr O W Hyman 874 Union Ave Memphis 3

TEXAS *Examination* Austin Oct. 22-23 Address Mrs Betty Ratcliff Chief Clerk, 407 Perry Brooks Bldg., Austin

WISCONSIN *Examination* Madison Sept. 24 Milwaukee Dec. 4 Sec., Mr W H Barber 621 Ransom St. Ripon.

*Basic Science Certificate required

DEATHS

Sanderson, Everett Shovelton ♂ Augusta, Ga, born in Fall River Mass, June 22 1894, Washington University School of Medicine, St Louis, 1934, specialist certified by the American Board of Preventive Medicine, professor of medicine, microbiology, and public health at the University of Georgia Medical Department, assistant instructor of bacteriology at Yale University School of Medicine in New Haven, Conn, from 1920 to 1923, assistant professor of bacteriology and pathology at the University of Virginia Department of Medicine, Charlottesville, from 1925 to 1928, head of the department of bacteriology and pathology at the University of Mississippi School of Medicine, University, from 1928 to 1930, assistant professor of bacteriology and public health at his alma mater from 1930 to 1934, from 1923 to 1925 on the staff of the Rockefeller Institute for Medical Research and in 1929 special member of the International Health Division of the Rockefeller Foundation, served with the American Expeditionary Forces during World War I, fellow of the American Public Health Association, member of the Southern Medical Association, past president of the Augusta-Richmond Tuberculosis Association, honors included an appointment in 1946 as chief regional medical officer of the China Mission to Kiangsi Province, under the United Nations Relief and Rehabilitation Administration program, died in Veterans Administration Hospital July 16, aged 60, of cerebral arteriosclerosis.

Freeman, Allen Weir ♂ Baltimore, born in Lynchburg, Va, Jan 7, 1881, Johns Hopkins University School of Medicine, Baltimore, 1905, specialist certified by the American Board of Public Health, member of the Medical Society of Virginia and the American Public Health Association, of which he was past president, served with the Virginia State Health Department from 1908 to 1915, and as director of the Rockefeller Hookworm Commission in Virginia from 1910 to 1914, epidemiologist in the U S Public Health Service from 1915 to 1917, state commissioner of health of Ohio from 1917 to 1921, resident lecturer in public health from 1921 to 1923 at Johns Hopkins School of Hygiene and Public Health, where he was professor of public health administration from 1923 to 1946 and dean from 1934 to 1937, served during World War I, for many years served with the Maryland State Department of Health and the Baltimore City Health Department, editor of "A Study of Rural Public Health Service," published in 1933, author of "Five Million Patients", died in Johns Hopkins Hospital July 3, aged 73, of carcinoma of the prostate.

Gustafson, Gerald Williams ♂ Indianapolis, born in Chesterton, Ind, Oct 8, 1899, Northwestern University Medical School, Chicago, 1925, professor of obstetrics and gynecology at the Indiana University School of Medicine, specialist certified by the American Board of Obstetrics and Gynecology, member of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons and the Central Association of Obstetricians and Gynecologists, fellow of the American College of Surgeons, in 1945 a member of the advisory committee to the Bureau of Maternal and Child Health of the Indiana State Board of Health, and in 1946 and 1947 chairman of that committee, in 1948 named chairman of the Indiana State Medical Association Committee on Maternal and Child Health and from 1949 through 1953 a member of that committee, on the staffs of the Coleman, St Vincent's, and Methodist hospitals, died in the Massachusetts General Hospital, Phillips House, June 14, aged 54, of complications following an operation.

Sobel, Jacob ♂ New York City, born Dec 17, 1872, Columbia University College of Physicians and Surgeons, New York, 1895, an Associate Fellow of the American Medical Association, past president of the Harlem Medical Society, from 1899 to 1922 associated with the city's department of health, serving during the last four years of that period as assistant director of the bureau of child hygiene, from 1922 to 1933 a member of the health department's advisory board, at one time professor of

hygiene at Fordham University School of Medicine, founder of the Hospital for Joint Diseases, where he was president of the medical board in 1934, and for many years attending pediatrician, served as attending pediatrician at the Beth David and Gouverneur hospitals, in 1942 won first prize in a national essay contest arranged by Town Hall in connection with its radio forum, "America's Town Meeting of the Air", died July 25, aged 81.

Gerhart, William Francis ♂ Selinsgrove, Pa, born in Philadelphia Nov 3, 1887, College of Physicians and Surgeons, Baltimore, 1912, during World War I served overseas as a captain in the Medical Corps and later as contract surgeon for the U S Army Recruiting Office in Philadelphia, where he formerly practiced and where he was a member of the board of health and was affiliated with the Frankfort Hospital and the Philadelphia State Hospital, from 1942 to 1952 served as staff physician at the Selinsgrove State School, consulting physician for the Eugenia Memorial Hospital at White Marsh until recently, died July 2, aged 66, of esophageal varices.

Towne, George Scott ♂ Saratoga Springs, N Y, born in South Woodbury, Vt, Sept 3, 1873, Albany (N Y) Medical College, 1899, an Associate Fellow of the American Medical Association, and a member of its House of Delegates in 1918, 1940, 1942, 1943, 1944, fellow of the American College of Surgeons, served as president of the New York and New England Association of Railway Surgeons, affiliated with the Saratoga Hospital, where he was past president of the staff, served as surgeon for the Adirondack Division of the Delaware & Hudson Railroad, past president of the Saratoga Springs Rotary Club, died in a nursing home in Stamford, Conn, July 20, aged 80, of a cerebrovascular accident and general arteriosclerosis.

Andrews, Herman David ♂ Glen Cove, L I, N Y, University of Buffalo School of Medicine, 1905, member of the American Academy of Ophthalmology and Otolaryngology, an associate fellow of the American Medical Association, practiced in East Aurora and Buffalo, where he was on the staff of the Buffalo Eye and Ear Hospital, died July 23, aged 75.

Baker, George Washington ♂ Walters, Okla, Atlanta College of Physicians and Surgeons, 1902, served as county health superintendent, died in Duncan July 15, aged 81, of cardiorenal insufficiency.

Baker, Johnson Joshua ♂ Magnolia, Ark, Memphis (Tenn) Hospital Medical College, 1902, served as city and county health officer, died July 25, aged 75, of carcinoma of the liver.

Barnes, Harry Aldrich, Pembroke, Mass, Harvard Medical School, Boston, 1896, specialist certified by the American Board of Otolaryngology, member of the American Laryngological Association and the New England Oto-Laryngological Society, served during World War I, formerly on the staff of the Massachusetts General Hospital in Boston, died July 18, aged 82.

Barnett, James Russell ♂ Arkadelphia, Ark, University of Arkansas School of Medicine, Little Rock, 1940, on the staff of the Memorial Hospital, died in Gurdon (Ark) Municipal Hospital July 7, aged 41, of heart failure.

Bauer, John A ♂ Germantown, Ill, Beaumont Hospital Medical College, St Louis, 1897, served on the staff of St Joseph's Hospital in Breese, where he died July 15, aged 80, as the result of a fractured knee and diabetes mellitus.

Billings, Elton Pope ♂ Grand Rapids, Mich, University of Michigan Medical School, Ann Arbor, 1906, at one time on the faculty of his alma mater, affiliated with Butterworth and Blodgett Memorial hospitals, died July 3, aged 79, of coronary occlusion.

Blum, Julius, New York City, Columbia University College of Physicians and Surgeons, New York, 1910, formerly with the bureau of laboratories of the city health department, served as pathologist for the Home for Hebrew Infants, died July 13, aged 69, of cerebral thrombosis.

Breuer, Roland George & San Jose, Calif., University of Nebraska College of Medicine, Omaha, 1919 affiliated with San Jose Hospital and O Connor Hospital, where he died June 22, aged 59, of lobar pneumonia, following an operation

Clarke, William Franklin, Petersburg, Va., Leonard Medical School, Raleigh, N C., 1905, for many years member of the local draft board, died July 17, aged 88, of coronary occlusion

Cleary, Thomas Joseph, Brooklyn, Georgetown University School of Medicine, Washington, D C., 1908 affiliated with Samaritan Hospital, where he died July 24, aged 68, of cancer

Dialon, Ismar & Los Angeles, Ludwig Maximilians Universität Medizinische Fakultät, München, Bavaria, Germany, 1923 died July 3, aged 57, of coronary occlusion

Dickson, Hugh F., Covington, Tenn. Memphis (Tenn.) Hospital Medical College, 1909, died in Baird Brewer Hospital, Dyersburg, July 14, aged 69, of coronary occlusion

Dudley, Norman Spear, Church Hill Md., University of Maryland School of Medicine, Baltimore, 1901 served as county health officer; affiliated with Memorial Hospital in Easton, died in the Kent and Upper Queen Anne's General Hospital, Chestertown, July 1, aged 80, of cerebral hemorrhage

Duffy, Paul Victor & Cleveland, Creighton University School of Medicine, Omaha, 1922, specialist certified by the American Board of Obstetrics and Gynecology on the staffs of the Marymount Hospital, St. Ann Hospital, and St. Alexis Hospital, where he died July 5, aged 57, of abdominal carcinoma with metastasis

Fichthorn, Lewis Leitzell, Harrisburg, Pa., Western Pennsylvania Medical College, Pittsburgh, 1902, affiliated with the Western Pennsylvania Hospital, died July 5, aged 76, of coronary occlusion

Gaunt, George Garber, Cannon Beach, Ore., University of Oregon Medical School, Portland, 1910, died July 27, aged 72

Gee, Robert Lee & Hugo, Okla., St. Louis College of Physicians and Surgeons, 1903 past president of the Choctaw County Medical Society, died June 22, aged 75

George, Elmer August, Cleveland Western Reserve University School of Medicine, Cleveland, 1914, for many years physician for the board of education, and physician for the children's hygiene division of the city health department, died July 29, aged 68, of coronary thrombosis

Giles, Robert Emmett, Mendenhall, Miss. University of Nashville (Tenn.) Medical Department, 1906, served as part-time county health officer; died in Magee Aug 7, aged 75

Greeff, John G W & Quogue, N Y., Columbia University College of Physicians and Surgeons, New York, 1896, served on draft board during World Wars I and II, commissioner of the department of hospitals in New York City from 1929 to 1933 died in Center Monches July 27, aged 80, of arteriosclerosis

Grossman, Aaron & Allentown, Pa., Tufts College Medical School, Boston, 1931 served during World War II, member of the staffs of the Allentown and Sacred Heart hospitals, died July 3, aged 48, of a heart attack.

Gruenhagen, Arnold Phillip & St. Paul University of Illinois College of Medicine, Chicago, 1919, fellow of the American College of Surgeons, affiliated with Ancker, St. Joseph's, Miller, and St. Luke's hospitals, died July 6, aged 59, of cerebral hemorrhage

Hansbrough, Lyle Jamesson & Front Royal Va. University of Virginia Department of Medicine Charlottesville, 1936, on the staff of the Warren Memorial Hospital as chief surgeon died July 5, aged 42, of cerebral hemorrhage

Harbison, J Glen & Spokane, Wash., the Hahnemann Medical College and Hospital Chicago 1905, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1907, fellow of the American College of Surgeons served on the staffs of the Deaconess and Sacred Heart hospitals died July 18, aged 73, of pernicious anemia.

Henderson, Arvin, Ridgeville, Ind., University of Louisville (Ky.) Medical Department, 1911, died in the Jay County Hospital, Portland July 8, aged 66, of injuries received in an automobile accident.

Hill, George Washington, Ardmore, Okla., Meharry Medical College, Nashville, 1908, died July 16, aged 72, of heart failure

Hoffmann, Oskar, Utica, N Y. Medizinische Fakultät der Universität, Vienna, Austria, 1912 senior resident physician at Utica State Hospital, where he died July 31, aged 66, of myocardial infarction

Hollingsworth, Gervas Foster & Dyess, Ark., University of Arkansas School of Medicine Little Rock, 1928 for many years owner of the Dyess Hospital on the staff of the Osceola (Ark.) Memorial Hospital, died at his summer home in Lake Hamilton July 20 aged 52

Hubbard, James Filmer & Waynesboro, Va., University College of Medicine, Richmond, 1908, served during World War I affiliated with Waynesboro Community Hospital, died in the University of Virginia Hospital, Charlottesville, June 29, aged 78 of arteriosclerotic heart disease

Hurley, James Edward, Worcester, Mass., University of Maryland School of Medicine, Baltimore 1904 for many years medical examiner for the Baltimore and Ohio Railroad, died in St. Vincent Hospital July 6, aged 73, of duodenal ulcer

Hutchinson, Abbott Trask & Coconut Grove, Fla. born in 1880, University of Vermont College of Medicine, Burlington 1905 member of the Medical Society of the State of New York and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons an Associate Fellow of the American Medical Association, specialist certified by the American Board of Otolaryngology; at one time practiced in New York City; died in Brattleboro, Vt., July 12, aged 74, of chronic myocarditis and cerebral arteriosclerosis.

Hyland, Edward Joseph & Jamaica, N Y., University and Bellevue Hospital Medical College, New York, 1911 served during World War I affiliated with Mary Immaculate Hospital, where he died June 18, aged 67, of cerebral hemorrhage

Jarratt, Thomas Franklin, Jarratt, Va., University College of Medicine, Richmond, 1904, died May 21, aged 76, of a heart attack.

Keeling, James E & Waldron, Ind., Medical College of Indiana, Indianapolis 1891, an Associate Fellow of the American Medical Association formerly county health officer; vice president and director of the State Bank of Waldron died in Major Hospital, Shelbyville, June 26, aged 86, of chronic nephritis and arteriosclerosis

Kelly, Robert Andrew & Washington, D C., University of Pennsylvania Department of Medicine, Philadelphia, 1907, member of the American Society of Clinical Pathologists; died July 19, aged 68

Laczynski, Francis Stephen, Dearborn, Mich., Chicago College of Medicine and Surgery 1914, served during World War I affiliated with St. Francis Hospital in Hamtramck, died June 1, aged 64, of coronary thrombosis

Larrabee, Ervin E., Williamston Mich. Detroit College of Medicine, 1903, served on the staffs of the Edward W Sparrow and St. Lawrence hospitals died in Lansing July 7, aged 80 of cerebral hemorrhage

Lowe, Henry Huffman, Leesburg, Ohio, University of Cincinnati College of Medicine, 1915, president of the Highland County Medical Association served during World War I member of the Highland County Board of Education chief of staff of the Greenfield (Ohio) Municipal Hospital, died in the Holmes Hospital Cincinnati, June 26 aged 65, as the result of a kick from a horse

Lutz, James Sharp & Louisville Ky. Kentucky University Medical Department, Louisville 1905 served during World War I, died in St. Joseph Infirmary July 13, aged 76

McAllister, E. R., Seminole Okla., Barnes Medical College, St. Louis 1897, died June 5, aged 82, of coronary occlusion

Mahaffey, John A., Richmond, Ky, Hospital College of Medicine Louisville, 1893, past president of the Madison County Medical Society, affiliated with Pattie A. Clay Infirmary, where he died July 15, aged 88, of acute left ventricular failure

Marsden, Arnold Kenneth, Hartford Conn, Yale University School of Medicine, New Haven, 1952, certified by the National Board of Medical Examiners, also a dentist, from July 1, 1943, to Dec 22, 1945, an ensign in the U S Navy, resident at the Bellevue Hospital in New York City, died in Hartford Hospital June 18, aged 29, of Hodgkin's disease

Malster, Robert Mahaffey, Worthington, Ohio, Rush Medical College, Chicago, 1894, served during World War I, died in the Harding Sanatorium July 10, aged 85

Manly, Thomas Edward & Ramsey, N J., Fordham University School of Medicine, New York, 1921, formerly practiced in Paterson, N J, where he was sheriff of Passaic County, health commissioner, and at one time member of the state legislature, served on the staff of the Paterson (N J) General Hospital, where he died July 13, aged 56, of carcinoma of the left lung

Metzner, Abraham, Los Angeles, Cleveland Homeopathic Medical College, 1912, died July 6, aged 68

Morden, Esli Terrill & Adrian, Mich., Michigan College of Medicine and Surgery, Detroit, 1901, past president and treasurer of the Lenawee County Medical Society, at one time secretary of the Northern Tri-State Medical Association, served during World War I, past president and member of the board of the Adrian City Club, a charter member and director of the Adrian Rotary Club, of which he was president in 1938, died June 1, aged 76, of carcinoma of the liver

Murphy, Daniel Joseph & New Orleans, Tulane University of Louisiana School of Medicine, New Orleans, 1915, member of the American Academy of General Practice, past president of the Catholic Physicians' Guild, formerly vice-president of the Louisiana State Medical Society, served during World War I and was awarded the British Military Cross, past president of the staff of Hotel Dieu, where he died July 6, aged 60, of coronary thrombosis

Pettijohn, Blanchard Beecher, Indianapolis, Medical College of Indiana, Indianapolis, 1901, died July 9, aged 76, of arteriosclerosis

Piper, Harry Elwin & Santa Cruz, Calif., Medical Department of the University of California, 1902, formerly city health officer, chairman of the city planning commission, served during World War I, died in the University of California Hospital in San Francisco July 24, aged 77, of congestive heart failure

Ritchey, James Weslie, Kansas City, Mo., Missouri Medical College, St. Louis, 1891, died Aug 8, aged 85

Ritter, Fred Lester, Oceanside, Calif., Albany (N Y) Medical College, 1912, member of the founders group of the American Board of Surgery, formerly assistant professor of gynecology at Syracuse University College of Medicine, served during World Wars I and II, died in U S Naval Hospital, Camp Pendleton, July 9, aged 68, of dissecting aneurysm

Robles, Charles Walter & Lieut. Commander, U S Navy, retired, Tampa, Fla., University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1918, entered the U S Navy in December, 1920, retired Dec 1, 1943, died June 18, aged 59, of adenocarcinoma of the colon

Rosenblatt, Joseph & Kerrville, Texas, Long Island College Hospital, Brooklyn, 1915, member of the California Medical Association, American College of Chest Physicians, and the American Trudeau Society, affiliated with the Veterans Administration Hospital, died in the Sid Peterson Memorial Hospital, July 23, aged 70, of carcinoma

Rubenstein, William Evans, St. Louis, St. Louis University School of Medicine, 1923, died in the Jewish Hospital July 3, aged 55, of coronary thrombosis

Schwalbe, Albert Eugene, Ripley, Ohio, Cornell University Medical College, New York, 1910, died in the Good Samaritan Hospital, Cincinnati, July 8, aged 74, of carcinoma of the prostate and coronary thrombosis

Shapiro, Newton Hart & San Francisco, University of California Medical School, San Francisco, 1932, served during World War II, on the staffs of Mount Zion and Hahnemann hospitals, died June 20, aged 47, of coronary occlusion

Smith, Houghton Currier, North Amherst, Mass., Baltimore Medical College, 1903, died June 13, aged 77, of coronary thrombosis

Sparks, James Cecil, Ashland, Ky., Hospital College of Medicine, Louisville, 1906, past president of the Boyd County Medical Society, served as chief of staff of the King's Daughters' Hospital, died June 3, aged 79, of arteriosclerotic heart disease

Sproat, James, Portland, Ore. (licensed in Oregon in 1906), died June 24, aged 78, of perforated peptic ulcer

Stewart, Luther G., Ellaville, Ga., Atlanta Medical College, 1895, died June 2, aged 82, of arteriosclerosis

Strayhorn, Le Roy Powell & Santa Ana, Calif., Memphis (Tenn.) Hospital Medical College, 1903, on the staff of St. Joseph Hospital in Orange, where he died May 14, aged 75, of congestive heart failure

Stukes, Joseph Theoditus, Americus, Ga., Medical College of the State of South Carolina, Charleston, 1901, died in Macon July 5, aged 77, of Parkinson's disease

Sussman, Jacob Joel & Brooklyn, Long Island College Hospital, Brooklyn, 1911, affiliated with the Kingston Avenue Hospital and the Maimonides Hospital, where he died July 12, aged 66, of mesenteric thrombosis and auricular fibrillation

Suter, Waldo Charles & Waterville, Ohio, Ohio State University College of Medicine, Columbus, 1926, past president of the Waterville Rotary Club, on the staffs of the Mercy Hospital, Flower Hospital, Toledo Hospital, and the Riverside Hospital in Toledo, where he died June 12, aged 60, of hypernephroma with metastases to the lungs

Sweeney, J. David & Minter City, Miss., Memphis (Tenn.) Hospital Medical College, 1902, died in Greenwood Leflore Hospital, Greenwood, June 22, aged 75, of cardiovascular renal disease

Taylor, Herbert Wellington & Lieutenant Colonel, U S Army, retired, Fairfax, Vt., University of Vermont College of Medicine, Burlington, 1911, served during World War I, entered the regular Army as a captain Sept 15, 1920, promoted to lieutenant colonel April 8, 1937, retired Dec 31, 1939, died July 2, aged 68, of cancer of the throat

Van Arsdall, Charles Alexander, New York City, Johns Hopkins University School of Medicine, Baltimore, 1949, interned at the Duke Hospital in Durham, where he served a residency, during the early part of the Korean War served as a lieutenant (jg) in the U S Naval Reserve, resident at the Bellevue Hospital Center 16, where he died suddenly, July 21, aged 28

Whaley, Arthur Maunder & Colonel, U S Army, retired, Washington, D C., University of Buffalo School of Medicine, 1896, fellow of the American College of Surgeons, entered the regular Army in 1903, promoted through the various ranks to that of colonel July 14, 1929, retired Dec 31, 1936, by operation of law, returned to active duty from Feb 10, 1942, to Dec 2, 1945, at one time superintendent of the Gorgas Hospital in the Canal Zone, died May 6, aged 81, of cerebral hemorrhage

Williams, Carl Granger & Santa Monica, Calif., College of Medical Evangelists, Loma Linda and Los Angeles, 1923, served during World War I, on the staffs of the Santa Monica and St. John's hospitals, died July 7, aged 57, of fatty degeneration of the liver

Williams, Robert Percy & Rutland, Vt., University of Vermont College of Medicine, Burlington, 1925, affiliated with Rutland and Proctor hospitals, died in Fulton July 25, aged 54, of coronary thrombosis

Wisely, Edward Darragh & Staten Island, N Y., Columbia University College of Physicians and Surgeons, New York, 1896, for many years served as secretary-treasurer of the Richmond County Medical Society, affiliated with St. Vincent's and Staten Island hospitals, died in the Richmond Memorial Hospital May 31, aged 79, of pneumonia

FOREIGN LETTERS

BRAZIL

Mechanism of Metastasis Production—During the International Congress of Cancer, held at São Paulo in August Dr Francisco Fialho of Rio de Janeiro reported that he had studied the different routes followed by the neoplastic cells and the general conditions that stimulate the production of metastases. Venous invasion is much commoner than arterial invasion. Metastases through the blood channels are common from chondrosarcomas. These may occur through the venous plexus as described by Batson or through arteriovenous pulmonary anastomosis. Metastases by way of the spinal fluid are uncommon and occur only in some types of the central nervous system blastoma. The structure of the primary tumor may interfere with the mechanism of metastasis. Malignant differentiated blastomas with slow development may produce metastases later or less frequently than the more undifferentiated tumors. The reported metastasis of the neoplasms considered microscopically benign suggest that their malignancy is more a biological than a histological condition. The fact that many neoplastic cells that enter the circulation are destroyed suggests a lack of adaptation of the neoplastic cell to the new tissue rather than a specific tissue defense.

Hemorrhage in Portal Hypertension—In a paper published in *Revista de medicina e cirurgia de São Paulo* for May, 1954 page 219, Dr Alvaro Dino de Almeida of São Paulo stated that patients with portal hypertension who die of hematemesis are rarely found at autopsy to have ruptured esophageal varices. He had seen patients with portal hypertension without hematemesis and others with slight hypertension who had profuse bleeding. When such varices are therapeutically sclerosed, hemorrhages from them do not occur, but hematemesis may occur in the absence of esophageal varices, peptic ulcers or neoplasms. Surface hemorrhages may be due to altered permeability of capillary walls or multiple erosions. The frequently seen association of changes in the central nervous system, especially in the hypothalamus, with hemorrhagic lesions of the digestive tract, especially the stomach, suggest that the same mechanism, through the autonomic nervous system, may be responsible for hemorrhages in patients with portal hypertension. Such patients might be benefited by bilateral vagotomy.

Intussusception—A series of 29 children with intussusception was presented by Drs Virgilio A de Carvalho Pinto and Roberto Vilhena de Moraes before the Associação Paulista de Medicina. All but two of the patients were under one year of age. Their study covers the period from January, 1951, to December, 1953. Six patients were treated by the barium enema method, 9 by the same method plus operation, and 14 by operation alone. There were three deaths. Early diagnosis improves the prognosis. The barium enema method of treatment should be used cautiously and only in the first few hours after the onset of symptoms. If the intussusception is irreducible or gangrene of the intestine is suspected, the treatment of choice is resection with primary anastomosis.

ENGLAND

General Practice in the United States and Britain—Dr Charles M Fleming of Scotland, after a three months tour in the United States, has compared the conditions of medical practice that he found with those in Britain. According to him, equipment is better in American practices. Examination couches in the consulting room are meant to be used and are not articles of furniture. Shortwave diathermy machines ultraviolet-ray lamps electrocardiographs x-ray machines spirometers for measuring basal metabolic rates and even anesthetic apparatus are far more in

evidence in American physicians' offices. Refrigerators for storage of biologicals, dressing carts, and scales for weighing patients might be said to be standard equipment. In the United States there is a much greater saving of the physician's time because he makes greater use of an ancillary staff such as nurses, technicians, and secretaries. The nurse commonly undertakes simple laboratory tests and secretarial work, but a separate secretary-receptionist and sometimes a technician are employed. The English general practitioner seldom employs a full-time secretary. Fleming described the waiting rooms attached to some group practices as comparable to lounges in luxury hotels. Laboratory work in such group practices is often complete and rarely is work sent outside. More elaborate investigations are done in hospital or commercial laboratories. The good general practitioner does not abuse laboratory tests or use them as short cuts to diagnosis.

Fleming noted that a large proportion of American general practitioners hold some form of hospital appointment. In Baltimore and New York, for example, about two-thirds of them have hospital affiliations. It is generally accepted that the American general practitioner should have the privilege of caring for his own private patients in a hospital and should have the opportunity of working under supervision in the wards and outpatient department of the public hospitals. Regular staff appointments are held by many general practitioners. Fleming states that in New York there are two and a half times as many physicians in proportion to the population as there are in Scotland. He thinks that if hospitals in Scotland were run on American lines every Scottish physician could have a hospital appointment in addition to his private practice. The American Medical Association, the American College of Surgeons, and the American Hospital Association advocate that the general practitioner as well as the specialist should have access to the modern hospital, which he should be able to use to the degree that his training and experience warrant.

The scope of the general practitioner's work in the United States is a good deal wider than in Britain. This, in part, explains his more elaborate diagnostic and therapeutic equipment, which is really necessary for his work and which is expected by his patient. An occasional major operation is still performed by general practitioners in large cities like New York and Baltimore. The general practitioner surgeon is now unknown in Britain, he disappeared with the advent of the National Health Service in 1948. In the United States the general practitioner is encouraged to investigate and treat his patients with a full range of diagnostic and therapeutic facilities, which in Britain are available only to the hospital specialist. Fleming says "I am satisfied that he [the American practitioner] can and does do a better job in many, but not all ways, than is done by the general practitioner here [in Britain]."

Group practice is commoner in America than in Britain. The physician in group practice is able to do his best work, having ready access to the necessary specialist advice and diagnostic and therapeutic facilities. Economy is effected by sharing accommodation, equipment, and ancillary personnel. There is also an economical use of medical manpower, because the young physician is kept fully employed and does not wait for patients for long periods in a newly established practice. The physician in group practice has time and facilities for private study and attendance at meetings, conventions, and postgraduate courses and can work more easily in any specialty in which he may wish to develop his knowledge and talents. He has more leisure because night duty, emergency calls and so forth are shared by some form of rotation. The fundamental justification for group practice is the opportunity it offers for greater efficiency in the key member of the team, the family physician, and hence better service for the patient. Fleming remarked that the American physician has more time in which to see his patient, he needs it to practice his wider range of skills. The only criticism Fleming had of general practice in the United States was that more time might sometimes be given to consideration of the patient as a person, this was often lacking when the physician was preoccupied with instrumental

investigation, laboratory tests, and roentgenologic and other examinations. In the main the British general practitioner has a better knowledge of the patient and his family, work, upbringing, and social background. Fleming was impressed with the standard of work done by most American general practitioners, the reactions of patients, and the confidence of all in the future of general practice. The success of the American Academy of General Practice with its membership of 17,000, has undoubtedly contributed to this and enhanced the status of the general practitioner.

Fleming compares the work and lot of the British general practitioner with his American counterpart. In Britain today there is so much competition for practice vacancies that the physician without adequate postgraduate experience in a hospital and as an assistant in general practice has little chance of success. Entry into general practice since 1948 has become far too difficult. Schemes are under way for the training of general practitioners after qualification, and a three year period is envisaged—one year under supervision of a general practitioner, another in a specially designed hospital appointment, and a third either in a hospital or as a locum tenens in general practice. Many specialist trainees are now going into general practice because more have been employed in hospitals than can be absorbed there and general practice is their only outlet at the moment. This condition, resulting from administrative errors in the health service, is only temporary. In Britain a college of general practitioners, similar to the American Academy of General Practice, has recently been founded, and it is hoped that this will facilitate the postgraduate educational needs of the general practitioner. So-called health centers with group practice, which were envisaged before it was realized that the health service would cost nearly \$1,400,000,000 yearly, now exist in the imagination only. One or two that have been built as an experiment have been found costly to build and run.

The skills acquired by the physician in training and in the hospital are often lost quickly in the more limited general practice in Britain. All patients but those with the simplest cases are now referred by him to a hospital for diagnosis and treatment. The British general practitioner has been slowly displaced over the years from the status of the "family doctor" in its fullest sense by the encroachments of socialized medicine and the growth of the clinic system and specialism. The latter has been intensified since the introduction of the National Health Service, which started at the wrong end. It has made it easier for the patient to enter the hospital for treatment by raising the status of the specialist and lowering that of the general practitioner, who often acts as a sign post directing the patient to the right hospital department. It has been pointed out that the way to run a health service efficiently and economically is to keep the patient out of the hospital whenever possible. This can be done by increasing the general practitioner's diagnostic and therapeutic skills, as has been done in the United States. By the use of special laboratory facilities and radiological examinations, it should be possible for the general practitioner to make the diagnosis in most cases. Apart from the few isolated districts where surgical emergencies cannot wait for a specialist and must be attended by the general practitioner, major surgery is, and should be, performed in the hospitals, where it can be done more efficiently.

The main needs of the general practitioner today in Britain are adequate time to do his work efficiently, facilities to practice medicine efficiently with his own accommodation, equipment, and staff and access to special diagnostic and therapeutic services at the hospital or elsewhere, some form of hospital appointment, and regular and appropriate postgraduate training. Time for the general practitioner could be gained by making entry into practice easier, stimulating partnerships, reducing the permitted maximum number of patients that a physician can have on his list, and improving the distribution of physicians in the community. Medical manpower could be saved by using ancillary services efficiently, as in the United States. Unfortunately, at the moment general practitioners are not welcome as members of hospital staffs. Many who were formerly attached to some of the larger hospitals were forced to resign when the National Health Service was introduced. In the British hospital system with its hierarchy of specialists, trainee specialists, and interns, there is at present little place for the general practitioner.

Abuse of Rest—In a discussion at the Royal Society of Medicine, London, Professor Arnott of Birmingham said that therapeutic rest was prescribed too often and unwisely by unthinking physicians. He extolled the value of work, even hard work, which is beneficial to the organism. In overdose, he said, rest is very toxic and sometimes lethal and should be classed as a "drug of addiction", like morphine and related drugs, it should be included in the scope of the dangerous drugs act and be prescribable only in clearly defined doses, not to be repeated without further prescription. Rest in bed occupies a large place in current therapeutics. It is normal for a person to be mobile and absurd for him to spend all his time in bed, even if he is ill. Rest is usually understood to mean rest in bed, Professor Arnott thinks that it should be out of bed, unless the physician prescribes it specifically in bed. Immobilization per se produces a train of profound disturbances in metabolism. The patient's nitrogen and calcium balance is disturbed and the increased excretion of calcium and rise in urinary pH favor the precipitation of calcium phosphate, and hence calculi, in the urinary tract. There is also a decline in blood volume, a deterioration in the hemodynamics normal for the erect position, impaired muscle tone, venous stasis, and an increased tendency to thrombosis. Skeletal wasting, joint malposition, stretching of ligaments, anorexia, constipation, and incontinence in the elderly are also penalties exacted by prolonged immobilization in bed. Rest in bed is anatomically, physiologically, and psychologically unsound. It is surprising how little bed rest is mentioned by medical writers of the 18th and 19th centuries. John Hunter spent little time in bed during his various illnesses. Hilton's "Rest and Pain," published about 100 years ago, focused attention on rest. It must be remembered, however, that most of his cases were inflammatory, such conditions as osteomyelitis and bone and joint tuberculosis did well with rest after other methods had failed. In many hospitals today the patient is expected to be in bed. The whole organization of the hospital is geared around this, in fact, the patient is a nuisance, particularly to the nursing and medical staff, if he is up and about. His relatives are told to take his clothes away. In the treatment of the chronically sick patient, rest in bed is often the only therapeutic regimen offered. In sentencing a patient to bed a physician reduces the income of the patient and that of the state if it pays him sickness insurance and provides free medical care. In addition, the productivity of the nation is reduced if the patient is a wage earner. Rest is a far costlier prescription than drugs. The irrational prescribing of rest and drugs is harmful not only to the patient but to the national economy and is an extravagance that can be ill afforded.

Care of the Aged—The care of the aged, particularly those who are sick and infirm, has become an acute problem in Britain. There are more old persons in the community than ever before. Chemotherapy has done much to reduce mortality caused by infections, but the number of persons with cardiovascular degeneration and malignant lesions has increased. These conditions and the minor infirmities of old age necessitate nursing care. Fewer persons are able and willing to look after their aged relatives. Overcrowding in the large towns and the high rate of employment of married and middle-aged women are no doubt contributory factors. The hospitals, on the other hand, are also reluctant to care for chronically ill persons, particularly if aged, as they need additional nursing care. There is still a shortage of nurses in Britain. The sick and infirm aged are thus wanted neither at home nor in the hospital. As pointed out by Ferguson and MacPhail in their book "Hospital and Community," the aged patient's health may owe far more to his home condition and nursing than to the disease he suffers from or to the medical treatment prescribed. The plight of seriously disabled and elderly persons, some living in squalor, is the most compelling problem of old age. Some old, sick persons can be satisfactorily treated only in a hospital, but many can be treated at home, and most of them prefer it whenever possible. They are reluctant to leave home. The district or visiting nurse can often help. There is a need for additional beds in hospitals for the "elderly chronic" patient. At Oxford a day hospital is being developed where the elderly infirm can be looked after in the daytime. The National Corporation for the Care of Old People has had encouraging results from sending old persons to convalescent homes for two

months Payment is made under the National Health Service Other efforts have been made to make life easier for the aged, such as the provision of "meals on wheels," laundry services, and chiropody The care of the aged was raised in the House of Commons recently when the Minister of Health referred to it as the most baffling problem of the whole of the National Health Service He thought the solution lay in the home and not in the hospital "Let us by all means ask if the State has failed," he said, "but let us also ask if the family and neighbours are doing all they can, or the local authorities, the voluntary bodies and the church" The care of the aged is a long-term policy that must be directed to the promotion of healthy living, independence, the provision of an interest in life, and the prevention of ill health

British Empire Cancer Campaign—The Duke of Gloucester presided at the annual general meeting of the Cancer Campaign on June 29 Professor F Dickens presented the annual report and said that research into methods of treatment of cancer was proceeding hand in hand with that on causation Surgery and radiation remain the accepted treatments for most cancers, and in the field of radiotherapy the opening of the new radioactive cobalt (Co^{60}) beam therapy unit has now made available for research the very intense gamma rays After a reference to hormone therapy, he said that the chemotherapy of cancer includes, besides the various radioactive isotopes, the new group of cytotoxic agents, which kill or injure the growing cell by chemical or metabolic interference with certain stages of cellular reproduction One of these is vitamin B_{12} , which causes a remarkable regression in neuroblastomas The study of the action of this group on the living cell and on isolated cell components has shed new light not only on the action of these drugs but also on the biological and biochemical events brought about by radiation itself In spite of heavy taxation and the effects of the National Health Service, donations and collections showed an increase but legacies a decrease, \$736,400 had been expended on grants to hospitals and research workers during 1953, and expenditure on the principal objects of the campaign had reached over \$840,000, or twice the figure for 1948 The outlay on fellowships had now reached \$76,776, covering 15 campaign fellows and an average of five exchange fellows to and from the United States and Canada

Pay Scale for Physicians—The British Medical Association decided at its annual meeting in Glasgow to set up a committee to examine the pay scale for physicians because criticism of the inadequacy of recent pay increases to hospital physicians had been voiced The committee will consider the earnings of physicians in private and public practice, of consultants, of family physicians, and of those in the Public Health Service, industry, and the armed forces It has been asked to make recommendations designed to establish a general pay policy Some members of the association resent the disparity between the increased pay given to general practitioners under the Danckwerts award and the recent small increases given to consultants in the hospital service Dr P W R Petrie of Edinburgh said the public was getting the idea that physicians were always squabbling among themselves about their slice of the cake The profession should present a united front Dr T Rowland Hill, chairman of the Central Consultants and Specialists Committee, announced that the government had hinted that it would consider raising salaries of senior hospital medical officers soon The meeting asked that an adequate defense fund be established by the consultants It was reported that the consultants had collected only \$25 200 for such a fund, but the general practitioners fund stood at \$1,400 000

GERMANY

Meeting of the Deutsche Aerztetag—The Deutsche Aerztetag, which held its annual meeting in Hamburg in June, considers only administrative questions while scientific problems are discussed by the meetings of special associations, such as the Deutsche Gesellschaft für Innere Medizin and the "Deutsche Gesellschaft für Chirurgie" The Deutsche Aerztetag, with Prof Hans Neuffer of Stuttgart presiding, dealt with the coming bill

concerning the relations between physicians and sick-funds For about 20 years the fees as a whole have been paid to the local associations of physicians and distributed to the physicians according to a schedule Because even a well-to-do person may now be a member of a sick fund the Deutsche Aerztetag has been trying to restrict the membership to persons earning 7,200 marks a year or less Today only a few people are treated as private patients, 80% of the inhabitants of Western Germany being members of the sick funds

Poisoning by an Insecticide—Some deaths from widely used insecticides have occurred this year The first cases, victims of murder, were followed by a few suicides The substance, a phosphoric acid ester called parathion (E 605), belongs to the group of compounds inhibiting esterase, the effect of which was reported by Adrian, Feldberg, and Kilby in Great Britain and Gremels and Gross in Germany about 10 years ago This compound has proved an important means of studying the action of acetylcholine on the nerve fibers The government and the medical press discussed rigorous regulations in order to prevent further deaths, but as parathion is an almost indispensable insecticide for farmers and is harmless if simple precautions are taken, the authorities agreed to avoid restrictions, otherwise, as Professor Lendle of Göttingen said, the government would have to prohibit the free sale of many commonly used chemicals

Tropaeolum Majus—In 1951 Prof A G Winter, a botanist of Bonn, detected antibiotic properties in *Tropaeolum majus* (nasturtium) An extract showed a broad antimicrobial spectrum and no appreciable side-effects The effective substance seems to be eliminated by the kidneys and the lungs Good results have been obtained in the treatment of uncomplicated angina and cystitis with this drug as reported by Dr H Stückl of Cologne at a meeting of the Rheinisch-Westfälische Kinderarztervereinigung in May

The Physiology of Ontogenesis—The old concepts of mechanical factors regulating the ontogenesis of organisms seem to be outmoded by the detection of endocrine influences Thus a new hormone regulating the development of the silkworm has been prepared by Nobel prize winner Prof Adolf Butenandt and Dr Peter Karlson in a pure crystalline form The investigators made their report at a meeting of the Deutsche Zoologische Gesellschaft at Tübingen in June

NORWAY

Scope of Tuberculin Matriculation—In 1948 Dr Tobias Gedde-Dahl published a book on tuberculosis infection in the light of tuberculin matriculation His advocacy of tuberculin matriculation soon began to attract attention outside Norway, and an abbreviated edition of his work appeared in the *American Journal of Hygiene* for September, 1952 His system consisted of keeping the whole of a community under tuberculin control by the periodic testing of tuberculin negative persons By such action it should be possible, in his opinion, to discover fresh primary infections and thereby to focus control on a group of heavily threatened persons By tuberculin matriculation it should also be possible to avoid the x-ray examination of uninfected persons Gedde Dahl's original work was carried out on the west coast of Norway in a district heavily infected by tuberculosis His success with tuberculin matriculation in such a district did not, however, convince him that his system would be unsuitable in districts with a low infection rate Indeed, he argued, Tuberculin matriculation is the fundamental principle in tuberculosis control of the future in regions or populations with low infection rates The less frequent the occurrence of tuberculosis, the more selective the method must be

This teaching has now been challenged by Dr H K Sandberg (*Tidsskrift for den norske lægeforening* 9 317 [May 1] 1954), who speaks for an inland Norwegian district with a rural population living chiefly on farming and forestry and with a total population of about 2 800 This district has ceased to be the tuberculosis ridden and poverty-stricken area it was more than 20 years ago During the last 20 years it has prospered economically and brought its tuberculosis rate down to a record

low level. Since the school year 1936-1937, every school child in the district has been tested with tuberculin every year, and in the autumn of 1953 all the 303 children in the first six grades were found to be tuberculin negative. The 43 children in the seventh grade were also all negative and were vaccinated with BCG (bacille Calmette Guérin) in the spring of 1953. In 1951 and 1952 all the 2 060 persons over the age of 15 were requested to undergo tuberculin testing and 2 004, or 97.3%, did so. There were 530 positive reactors, 1,248 negative reactors, and 226 who had been vaccinated with BCG. All the 530 positive reactors were asked to undergo a radiological examination, and 510 of them did so. The result was the discovery of only one case of pulmonary tuberculosis in a man aged 44. Sandberg credits the discovery of most of the cases of tuberculosis in his district in recent years not so much to systematic, wholesale examinations as to concentrating on suspected cases with repeated Pirquet testing, roentgenograms, and examinations of sputum. He will continue to test every school child every year with tuberculin and combine such testing with BCG vaccination at the school-leaving age. He feels sample testing here and there with tuberculin should also be continued, and persons suffering from protracted colds, influenza, bronchitis, and pneumonia should also be tested with tuberculin and given radiological examinations. Should a school child become tuberculin positive for the first time, every effort must be made to discover the source of infection in its environment. Sandberg argues that the medical profession should not "bind too great a part of our health machinery to work which gradually gives smaller and smaller chances of positive findings." Time alone will show how much the success of tuberculin matriculation has depended on the genial and forceful personality of its originator and how much on its intrinsic merits. The special conditions under which tuberculin matriculation is most effective should also be determined. Meanwhile it is a moot point, according to Sandberg, whether the aim should be a community with as many tuberculin negative persons as possible or one with as many tuberculin positive persons as possible, thanks to BCG vaccination.

Diabetes—In a report on the health of babies born to diabetic women, Dr. Arne Kåss points out that while the prognosis for the mother has been profoundly changed by treatment with insulin, the outlook for the child remains unchanged, a fact whose importance is increased by the growing number of such children. They are apt to seem perfectly fit at birth, but two or three days later they may suddenly collapse with cyanosis and signs of acute dilatation of the heart. Recent observations by Engleson and Björklund of Sweden have suggested that such fatal attacks may be due to the development of hypopotassemia. Kåss has taken his cue from these observations and has given 0.5 gm. of potassium chloride through a stomach tube to an infant who collapsed suddenly when 13 hours old. The same dose was given on the third, fourth, and fifth days of life. This treatment was indicated by the electrocardiographic evidence of hypopotassemia demonstrated at the time of the sudden collapse. The electrocardiographic manifestations disappeared within three hours of the first administration of potassium chloride. The further course of the case was uneventful.

In an article on diabetes and pregnancy, Dr. Artur Voll concludes that the prospect of the offspring of a diabetic parent or parents themselves developing diabetes is so great that it would be well to discourage the marriage of two diabetics or of a diabetic with the child of another diabetic. Persons contemplating marriage under these conditions are entitled to factual information if they are foresighted enough to consult a physician on the subject. Another study comes from the Ullevaal Hospital, where 147 diabetics were treated in the period 1948 to 1952. In this study, Dr. Sverre Aarseth, shows how, thanks to insulin, the mean age of diabetics admitted to hospital has risen. Hanssen's study for the period 1936 to 1939 showed that about 50% of Ullevaal's diabetics were over the age of 61, whereas this was the case with 63% of Aarseth's patients. Among 98 patients operated on, nine died shortly after the operation, but Hanssen's study also shows how much can be effected by skilled preoperative and postoperative treatment and modern anesthesia. He prefers local anesthesia whenever possible, and for amputa-

tions he recommends spinal anesthesia or freezing. If general anesthesia is required, a combination of nitrous oxide, oxygen and ether is preferred. These three studies are published in *Tidsskrift for den norske lægeforening* for July 1, 1954.

Epidemic Nephrosis—At the Hedmark County Hospital in Elverum, Dr. Bjarne Tungland has undertaken a special study of 26 men and 2 women, who, between Oct. 15, 1948, and Feb. 1, 1954, were found to be suffering from epidemic nephrosis, a disease that has been observed hitherto only in Finland, Norway, and Sweden. The epidemic character of this disease is shown by the fact that most of the cases were confined to the winter of 1948-1949, whereas in 1950 the hospital did not admit a single patient with the disease. Epidemic nephrosis occurred only in the dark months of the year, October to April, and its victims were to a great extent woodmen living in primitive huts. Most of the patients were between the ages of 20 and 40, and the youngest patient was 11 years old. The onset of the disease was sudden, with fever, headache, and pain in the kidney region. In 16 patients abdominal pain dominated the clinical picture. The most important aid to the correct diagnosis was given by the urine, which was of very low specific gravity. Proteinuria was found in all patients but one, and 23 showed azotemia. There was polyuria beginning in the second week, and the proteinuria and azotemia passed off after several days. The incubation period was two to six weeks. All the patients recovered after a stay in hospital ranging from 9 to 55 days. A follow-up examination of 10 patients five years later showed no signs of renal disease. Tungland, whose report is published in *Nordisk medicin* for May 6, 1954, suspects that epidemic nephrosis may be a virus disease transmitted by field mice. He refers in this connection to Thjøtta's examination, with negative results, of several mice from a dwelling in which five members of a family had developed this disease.

Quinacrine (Atabrine) for *Tenia Saginata*—At the Bodo Hospital in the far north of Norway, several patients with *tenia saginata* infestation have been treated in different ways. At first the results were disappointing, perhaps because the extract of filix given was not potent enough. All the seven patients who had undergone the conventional course of treatment with capsules of filix and two patients who had been treated with gentian violet had a relapse within a few months. These failures led to a trial of quinacrine (Atabrine) on nine patients whose reaction was very satisfactory. The slight and transitory yellow color of the skin and scleras was quite harmless, and the tapeworms discharged in response to this treatment formed long, unbroken yellow chains. In two cases a dose of 0.8 gm. proved insufficient, for, though many segments were discharged, the head was not evacuated, and a relapse occurred. When this dose was repeated once or twice in the course of the week there were no relapses. Reporting on this treatment in *Tidsskrift for den norske lægeforening* for June 15, 1954, Dr. R. Nissen Meyer suggests that, when as much as 2 gm. of quinacrine are given in the course of two days, it may be possible to dispense with the older ritual of tapeworm treatment with special dieting, castor oil, and enemas that are a great nuisance to the patient.

PERU

Tuberculosis Congress—At the Second Peruvian National Congress of Tuberculosis in April, it was reported that the tuberculosis mortality rate in the main cities of Peru is high, but that it has decreased during the period 1942 to 1951 and especially since 1948. The tuberculosis mortality rate in the country as a whole is lower than that of the cities and its decrease in the period under review is less marked. This decrease is due to such factors as an improvement in the average standard of living, protective social laws, the increase in the number of health campaigns, especially the antituberculosis campaign, and the increasing use of modern antituberculosis drugs. Morbidity rates in the principal cities were found to be 2 or 3%. The highest morbidity rates occur among people coming to the cities from the more remote parts of the country to obtain work.

The two main problems arising from the use of antibiotics in the treatment of tuberculosis are toxicity and the creation of drug resistant strains of *Mycobacterium tuberculosis*. The combined use of chemotherapeutic agents offers the best results, inasmuch as it increases their therapeutic efficacy, delays the development of drug resistant strains of tubercle bacilli, and diminishes the risks of toxicity. The combined use of streptomycin and *p*-aminosalicylic acid or streptomycin and isoniazid gives the best results. A *p*-aminosalicylic acid and isoniazid combination is useful in patients with proved resistance to streptomycin. The use of a single chemotherapeutic agent may be beneficial under certain circumstances that can only be assessed by the phthisiologist when observing the progress of a given patient. Dosage schedules must be fitted to the clinical feature of the illness and conditions of the individual patient under the watchful control of the phthisiologist. A hygienic and dietetic regimen, including rest in bed, is also essential. The use of chemotherapeutic agents during the pre and postoperative stages in patients undergoing pulmonary collapse or resection diminishes both the number and the gravity of complications. Teamwork in well-equipped centers and efficient nursing have decreased mortality among patients operated on.

The congress went on record as urging the foundation of a National Institute of Phthisiology. It also recommended that (1) the number of aid centers for tuberculous children be increased and that they admit children up to 16 years of age, (2) dental services be made a part of the antituberculosis campaign, (3) the antituberculosis campaign be extended throughout the country, (4) the National Health Service for Workmen as well as for Employees, build their own hospitals for their insured members, (5) a department of health, education, and propaganda be established within the antituberculosis department of the Ministry of Public Health, and (6) all the tuberculosis services in the country be placed under the direction of the antituberculosis department.

SWEDEN

Sarcoidosis.—At a meeting of the Swedish Medical Society Dr Sven Löfgren stated that erythema nodosum provides the most important material for the study of sarcoidosis in its primary stage. With the falling incidence of tuberculosis in recent years primary sarcoidosis, rather than tuberculosis, has become the commonest cause of erythema nodosum among adults in Stockholm. Mass radiographic surveys in Sweden have shown that 0.5 to 1 per 1,000 of the population suffer from recent or chronic sarcoidosis. Löfgren has found that about 50% of the patients suffering from primary sarcoidosis give a positive reaction to tuberculin, whereas the generalized or chronic form of the disease shows a much lower rate of positive reactors. His follow up study of 111 patients suffering from primary sarcoidosis and erythema nodosum showed that 102 of them had recovered from their sarcoidosis within two years. In the remaining nine patients chronic sarcoidosis had developed, the prognosis for which is relatively poor, with pulmonary fibrosis and cardiac insufficiency often proving fatal after many years. Dr E. Törnell gave reasons for dissociating tuberculosis from sarcoidosis. Among 72 patients with erythema nodosum of tuberculous origin, 37 had a history of extrafamilial exposure to infection and 9 to intrafamilial infection, whereas among 59 patients with sarcoidotic erythema nodosum not one had such a history. Tuberculosis was found in the parents or siblings of 11.5% of the patients with sarcoidosis, a rate approximating that found in the general population tested by mass radiography. The corresponding rate was 35% for known cases of tuberculosis. Dr Bo Carstensen of Östersund treated more than 200 patients with sarcoidosis in a period of four years. In the spring of 1951 he started treating sarcoidosis with steroid hormones. As of Dec 31, 1953, he had given 66 patients this treatment, the outcome of which is recorded in tabular form in *Nordisk medicin* for July 15, 1954. The treatment of pulmonary sarcoidosis with corticotropin and cortisone cannot as yet be regarded as reliable. Use of the drugs

is indicated chiefly when the disease is situated in the central nervous system, the heart, and, in particular, the eyes. In such cases this treatment may be lifesaving.

An Outbreak of Trichinosis.—The comparative immunity to trichinosis that Sweden enjoys can largely be traced to the efficiency with which meat inspection is enforced, but the ideal in this respect is not always attainable, partly because compulsory inspection is not always enforced in small communities. In the summer of 1953, a small outbreak of trichinosis occurred in Östergötland and was the occasion for a special study undertaken by Dr Sven-Ove Arvidsson and reported on in *Svenska läkartidningen* for June 4, 1954. All the 17 patients were found to have consumed meat provided by one shop, and a farm supplying the shop with pork became incriminated when one of its pigs was shown to harbor the parasite. About 1 km from this farm was a fox farm overrun by rats, two of which were also found to harbor the parasite. It was learned that the bodies of the foxes slaughtered for their pelts had been buried so superficially that they were accessible to rats. The most constant features of this outbreak, which resulted in only one death, were fever lasting from one to four weeks and edema of the eyelids. Diarrhea and abdominal pain marked the onset of the disease and lasted for about a week in most patients. With only two exceptions involvement of the muscles was indicated by pain and tenderness in both arms and legs. Eosinophilia, ranging from 16 to 44%, usually reached its maximum by the end of the third week. In spite of high fever, the sedimentation rate was only slightly raised in most patients.

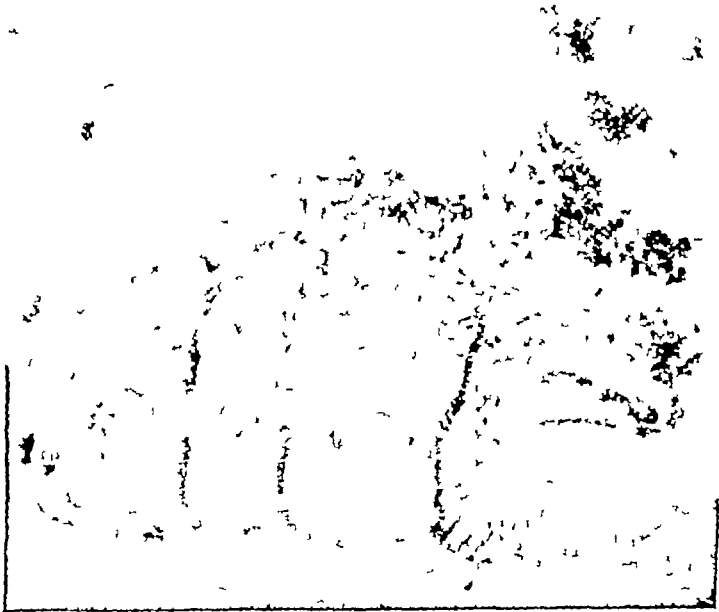
Penicillin Treatment of Acute Gonorrhea.—The polyclinic department of the Garrison Hospital in Stockholm treats many patients with gonorrhea. During 1952 and 1953, penicillin was given to 367 such patients whose response to this treatment is analyzed by Dr Anders Lodin in *Svenska läkartidningen* for June 25, 1954. As soon as gonorrhea was diagnosed one million units of procaine penicillin were given. A direct bacteriological examination was repeated next day and again weekly for four or five weeks, the follow-up control being completed with one to three cultures. All the first examinations after the injection failed to reveal gonococci. Recurrences were observed, however, in 17 patients. In so many of these a new infection was possible that the recurrence should be considered a reinfection rather than a relapse. Six patients with prostatitis and vesiculitis and four with epididymitis (always left-sided) required repeated injections of penicillin, totaling 4 to 5 million units. Lodin is inclined to reduce his original dose as experiences in the United States and England suggest that just as good results can be achieved with only 300,000 units. This dose is probably also sufficient to eradicate any undetected syphilitic infection that might be present. As for the development of penicillin resistant strains of gonococci in response to a too small a dose of penicillin, Lodin doubts the existence of such strains.

Artificial Insemination.—The departmental committee of experts appointed by the Swedish government to study artificial insemination failed to agree, and a majority report has now been submitted to the Swedish Medical Society whose criticisms of it are published in *Nordisk medicin* for July 8, 1954. Here it is pointed out that if the majority report were to be accepted, the consequences would undoubtedly be harmful not only to the parties directly concerned, but also to the state. Though it may be hard for a barren wife to remain so, the welfare of the child must come first, and it has a right to know who its father is. Far too much responsibility is laid on the physician who is expected to choose a suitable donor for heterologous insemination and who must make sure that the donor is in possession of various good qualities. It may be difficult to discover a man who is such a paragon of virtue and who is willing to act as a donor and the enquiries set on foot to establish his suitability for semen donation may rob him of some of the anonymity he is expected to enjoy. The practice of artificial insemination should in the opinion of the Swedish Medical Society, be forbidden by law, but with this loophole, that it would be possible in special circumstances to give dispensation for breaking the law.

CORRESPONDENCE

LYMPHOSTATIC VERRUCOSA

To the Editor—May I be permitted to make a few remarks in relation to a short note published in *THE JOURNAL* (155 1000 [July 10] 1954) regarding lymphostatic verrucosa, which is described by Professor Leon of Quito as probably of infectious origin. The symptoms and clinical features as described by Professor Leon are fairly common in China. During my 19 years' stay in that country many cases of that type have been observed at the department of dermatology, National Medical College of Shanghai and St. John's University Medical School. My investigations have been published (Reiss, F. Relationship Between Chronic Dermatophytosis of Feet and Recurrent Erysipelas-like Manifestations, *Journal of Clinical Medicine, Shanghai* 3 13, 1938). A short abstract of the article and of additional observation may give evidence that lymphostatic verrucosa is identical with what I termed elephantiasis verrucosa nostras. Furthermore, it appears to be evident that the disease is a sequel of recurrent attacks of erysipelas, which may clarify the assumption of Professor Leon that the disease is probably of infectious



origin. My observations also prove that the disease also occurs among persons who do not live on plateaus 2,400 meters above sea level.

Following are the salient features of my observations. There is always a history highly suggestive of recurrent attacks of erysipelas. Generally one leg is affected, though both may be involved. Either one or both legs are enlarged from 2 to 7 in (5 to 18 cm). A fungous infection of the interdigital spaces generally accompanies these changes. Such elephantiasic legs show either (1) slightly atrophic, glossy skin, (2) an impetiginous, eczematous surface, (3) lichenified eczematous patches, or (4) warty papillomatous changes (elephantiasis verrucosa nostras). The last type has not previously been described as a sequel of recurrent attacks of erysipelas of the legs associated with chronic dermatophytosis. These verrucous changes generally affect the ankles, the dorsa of the feet, and/or the toes. The warty lesions either occur in small groups or form larger confluent plaques surrounded by an inflammatory zone. On pressure, a moderate amount of purulent matter can sometimes be squeezed out that is composed of common pyogenic organisms. Neither physical or laboratory examination gave any evidence of filariasis, syphilis, tuberculosis, or fungous infection. The early recognition of a chronic fungous infection of the feet is emphasized because by its early treatment recurrent attacks of erysipelas and its sequelae could be prevented. These consequences are not so readily amenable to treatment and mean not

only a permanent deformity of the legs but also a handicap to locomotion. The histopathological findings also confirmed that neither tuberculosis or any fungous infection of the chronic granulomatous type caused the changes of moderate to severe hyperkeratosis and akathosis and edema of the cutis with dilatation of the lymph and blood vessels. A predominant round cell infiltration, a number of young fibroblasts, and a few epithelioid cells could be seen, but plasma and giant cells were not observed.

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MISUSED EXPRESSIONS

To the Editor—From time to time in this section, a voice is raised in defense of correct medical phraseology. This appeal is not made by the purists in grammar, the classicists in language tradition, or the provincial perfectionists who are critical of all terminology except their own. It is made by those who have occasion to read manuscripts for publication and who review medical articles and books for the scientific literature. It is well, therefore, that at intervals attention should be called to the commoner errors in this field. Editors of scientific journals probably wince at some of the material they inspect, and it is well known that some papers presented for publication receive rejection slips because of the misuse of conventional expressions that are presumed to be in good favor. If a case report or a medical essay is worthy of being shared by others in the literature, it should be in acceptable scientific terminology.

Following are the most commonly misused expressions that occur even in "high places": "The physical examination revealed," "The roentgenogram showed," "The laboratory findings demonstrated," and combinations of these. Since inanimate subjects cannot have active verbs, these statements are grammatically and technically incorrect, but they have been absorbed into medical phraseology from one generation of medical students and authors to another. The acceptable manner of reproducing the above phrases is "On physical examination there was (were)," "On roentgenograms there were," "The laboratory findings were." The correct usage is by far the simplest and easiest, without the blind acceptance of the hoary and repetitious.

Because the words serology, pathology, surgery, and chemistry are the names of specific medical sciences, it should be unnecessary to point out that the common clichés—"the serology was negative," "the pathology of the tissue was negative," "the patient was prepared for surgery," or "his chemistry was normal"—are all quite unacceptable. When these words are used in their adjective form, the statements have a definitive meaning, as "The serological examination of the spinal fluid was within normal range," or "The patient was prepared for a surgical procedure (or operation)." The frequent statements "The patient was placed on penicillin" and "The infant was put on evaporated milk" are incorrect because, literally, these acts would be quite messy if really executed as stated. The terms administered, given, or fed would be acceptable in the correct expression of such phrases.

Many lesser violations of grammar and facile expression could be enumerated, and almost every earnest reader has many pet annoyances that he notes without possible redress. Among these are modifying adjectives to definite statement-words, such as "rather typical reaction," "bluish gray," or "reddish brown"; all these imply that the writer is not positive of his original meaning. Such expressions as "The patient had no temperature" and "The urine was negative" are obviously intolerable and are all too common misstatements that should not appear in good medical writing or speech. The standard and tried argument that common usage justifies the acceptance of these medical "hybrids" violates both technical ethnology and correct nomen-

clature Their use in good medical writing often depreciates the industry and assiduous effort that the author has invested in his production

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GOVERNMENT SERVICES

AIR FORCE

Award for Research in Space Flight.—For research in the medical aspects of space flight, Hubertus Strughold, M D, head, department of space medicine at the Air Force School of Aviation Medicine, Randolph Field, Texas, has been awarded the Hermann Oberth Medal of the German Rocket Society. The presentation was made in August at Innsbruck, Austria, where Dr Strughold was attending the fifth annual congress of the International Astronautical Federation. The previous recipients of the medal have been engineers.

An early specialist in aviation medicine and high altitude physiology, Dr Strughold was head of the Aeromedical Institute of Berlin before World War II. Since 1947 he has been a staff member of the U S Air Force school. He received his Ph D from the University of Muenster in 1922 and his M D from the University of Wurzburg in 1923. He was a fellow of the Rockefeller Foundation in 1928-1929 doing research at Western Reserve University in Cleveland and at the University of Chicago. He is a fellow of the American Physiological Society, the Aero Medical Association, the American Association for the Advancement of Science, and Sigma Xi, and a charter member and secretary of the Space Medicine Association.

ARMY

Immunization Against Influenza for American Troops.—Army troops throughout the world will be immunized against influenza in accordance with a new inservice policy, Major Gen George E Armstrong, Army Surgeon General, announces. All Army troops will be administered the vaccine prior to a Nov 15 deadline before the onset of the usual winter respiratory diseases. Troops entering the Army after Nov 15 will be given the vaccine as soon as possible after induction. The new policy regarding immunization against influenza has been agreed to by the Surgeons General of the Army, Navy, and Air Force.

Last year, only Army troops in overseas commands were given vaccine for influenza. In years before, Army wide immunization was administered after the first cases of the respiratory disease were detected and identified. Using this system, it was not always possible to provide vaccine to protect all troops before the beginning of the season. But this year, according to General Armstrong, the Army will immunize all troops before the first outbreaks using a modified vaccine incorporating a recently isolated virus strain. "Experience has shown," said General Armstrong, "that effective individual and group protection afforded by immunization with influenza vaccine can be expected only when the vaccine is given in advance of the usual respiratory disease season."

Colonel McNinch Decorated.—Col Joseph H McNinch, newly assigned commander of the Army Environmental Health Laboratory, at Edgewood Md, has been awarded the Oak Leaf Cluster to the Legion of Merit. Colonel McNinch was serving in Japan during the period for which he was decorated. As Preventive Medicine Chief of the Medical Section, Far East Command he was cited for "displaying outstanding professional skill and forceful leadership in an extensive program for the prevention and control of disease within the Far East Command."

DEPARTMENT OF DEFENSE

Annual Military Medicodental Symposium.—The Fifth Annual Military Medicodental Symposium for all armed forces medical personnel of the United States will be held at the Naval Hospital, Philadelphia, Oct 18 to 23, under the sponsorship of the commandant, fourth Naval district. The program has been designed to include professional advances developed by both civilian and military medical services. The subjects will be presented by representatives of civilian and armed forces medical personnel who are outstanding in their specialties. Special sessions are planned for officers in the medical, surgical, dental, and administrative fields. The chief of Naval personnel has approved this symposium for the awarding of retirement point credit to those eligible Naval Reserve medical department officers attending. Officers of the medical department on active duty may be given "authorization orders" (no expense to the government) in accordance with current instructions. Medical department officers on active or inactive duty are urged to take advantage of the opportunity to attend this symposium.

VETERANS ADMINISTRATION

Physicians Wanted.—Physicians interested in the care of chest diseases are needed at the 450 bed Veterans Administration Hospital, Kerrville, Texas. The hospital, which is located in the hills of south Texas about 65 miles north of San Antonio, has an active and progressive in-service educational program for physicians, with nearly every specialty represented and headed by board men. General practitioners are eligible and will be trained, if necessary, for such position. The usual VA benefits and perquisites are available, with salaries up to \$10,800 depending on qualifications and experience.

A vacancy for a board qualified internist exists at the VA Hospital, Montgomery, Ala. The chief of the medical service and two section chiefs are certified, as are the other service chiefs. An excellent teaching program is continued throughout the year.

Places are available for resident training in radiology at the Veterans Administration Hospital, Bronx, N Y. Residency is approved for three years training and is supervised by full time, consultant, and attending radiologists, as well as physicists who are representatives of the deans committee of local medical schools. Training includes study of the use of radioisotopes. Salary ranges from \$2,640 to \$3,330 per annum. Korean war veterans receive extra pay under Public Law 550. Minimum requirements are graduation from an accepted medical school, one year internship, and American citizenship. Those interested should write to Chief of Radiology, Veterans Administration Hospital, 130 W Kingsbridge Rd, Bronx 68, N Y.

The Veterans Administration Hospital, Houston, Texas, has vacancies for residents in internal medicine, neurology, pathology, physical medicine, radiology and pulmonary diseases. Salaries range from \$2,640 to \$3,300 per annum. The residency programs are sponsored by Baylor University College of Medicine. Applicants should write to Dr Lee D Cady, Manager Veterans Administration Hospital, Houston, Texas.

PUBLIC HEALTH SERVICE

Hill Burton Projects.—A total of 2,283 hospital and health facility construction projects have been approved under the Hospital Survey and Construction Act in the period July 1, 1947, to June 30, 1954. The division of hospital facilities, Public Health Service, reports that 1,673 of these projects are now in operation, 521 are under construction and 89 have been initially approved. Completion of these projects will add 109,207 hospital beds and 404 health centers to the nation's health resources. As of this date 72,684 of these beds and 292 of the health centers are in use. During the fiscal year 1954, 151 projects were approved adding 6,328 beds and 50 health centers. One of these projects has already been completed.

COUNCIL ON MEDICAL SERVICE

Following is the 10th in a series of articles on state physicians placement services

PLACEMENT OF PHYSICIANS IN MONTANA

STATE CONDITIONS IN GENERAL

Montana seems well supplied with physicians. The number of persons per physician in Montana is considerably larger than the national average, but the ratio of one physician to each 1,000 persons places the state in the median position statistically. The increase in the number of physicians serving the people of Montana has lagged behind the increase in the population during the past 50 years, but improved methods of practice, better transportation, and other factors have more than offset this small lag. The population has increased 141% since 1900, while the number of physicians has increased only 92%. This discrepancy is less significant when the actual increases in population and number of physicians are examined. At the turn of the century there were 311 physicians serving the population of 245,000, whereas today there are about 600 physicians and 591,000 persons within the state boundaries.

Two problems found nationwide related to medical service are (1) poor distribution of physicians and (2) the advancing age of the physician population. The advanced age of a large proportion of the physicians practicing in some states, with the concomitant higher death rate and larger proportion of retired or limited-practice physicians, is making inroads on the number of physicians available to serve the persons in those areas. Montana, however, is not faced with an age problem. Its age distribution compares favorably with a state such as Illinois, in which nearly 75% of the physicians are below the critical age of 60 years. In Montana over 73% of the physicians are below the critical age, and nearly 35% of them are below the age of 40 years.

The bulk of the population, the large cities, and the Rocky Mountains are in the western part of the state, and the wide open, more sparsely settled areas are in the eastern part. The physicians, of course, are concentrated in the western area where the population is dense enough to support active practices. Actually, the big problem in Montana is one of distance rather than distribution. This distance between patient and physician has caused medical service to take to the air. In several places, the physician is using a small airplane to fly into remote territory to reach emergency cases. The persons in such places do not demand that a physician locate there, and they are well served when a physician can reach them by flying. Air travel is a convenience and time-saver for the physician who can make a trip by air in a matter of minutes that would take him several hours on the surface.

HISTORY OF PHYSICIANS PLACEMENT SERVICE

For a number of years the Montana Medical Association has been rendering a service, free of charge, to communities and physicians that indicate a desire for help. Shortly after World War II the office of the elected secretary of the society began receiving inquiries from physicians desiring aid in finding locations in which to begin a practice of medicine. In time, the communities desiring aid in attracting a physician became aware of the existing service of the society, and more inquiries came to this office. Physicians who had become acquainted with the attractions of Montana while in the Armed Forces came seeking help. In 1950, the medical society employed its first executive secretary, Mr. L. R. Hegland, and placed the responsibility for conducting the service in his office. In March, 1953, the Montana House of Delegates officially adopted resolutions authorizing the activity of aiding physicians and communities through the office of the executive secretary.

METHOD OF OPERATION OF PHYSICIANS PLACEMENT SERVICE

The method of operation of the Physicians Placement Service in the office of the executive secretary is governed by the demands on it, which at present are not great. This allows Mr.

Hegland to handle each request individually, writing personal letters in all cases and obtaining information in the same fashion from the physician or community.

Requests from Physicians—The bulk of inquiries from physicians come from interns and residents, just finishing their medical training, who intend to set up practice in Montana. Occasionally a request will come into the office from a physician desiring to relocate in Montana. In a letter of reply, Mr. Hegland sends the physician a listing of communities indicating need of a physician, with the names of the persons to contact. Simultaneously, he asks questions concerning the physician's educational background and other pertinent subjects, to obtain information that was not contained in the letter of inquiry.

When the information concerning the physician is at hand, it is printed in the *Bulletin of the Montana Medical Association*, this is sent to all of the members of the medical society each month. The listing is of especial interest to those physicians needing an associate with just the qualifications listed or to one who would be interested in having another physician practice near him if the community could support both practices. Such information as the physician's educational background, his preference as to type of practice, and his marital status is of interest not only to resident physicians but also to communities that have indicated a need for a physician by letters of inquiry. Consequently, Mr. Hegland prepares a list of physicians who are seeking a location, with information on each physician, and mails it to all communities requesting aid. Once the initial contact between the physician and the community has been established through these services of the placement office, the responsibility lies with the community for completing arrangements. During 1952, about 15 physicians were aided in locating by the placement office. Currently, the list of physicians is composed of the names of 25 physicians.

Requests from Communities—At present, 14 communities in Montana have indicated need for a physician, in 1952, an estimated 10 communities were aided in securing the services of a physician. The most frequent method of request is by letter, but occasionally committees or representatives of communities will visit the placement office in Billings, Mont. Other methods of learning about needs of communities for physicians are by referral of community letters requesting aid from the Physicians Placement Service of the American Medical Association. It is the policy of the placement service of the American Medical Association to refer requests that it receives from communities to the state medical association, if the association maintains an active physicians placement service. It is necessary in each case to evaluate the degree of need and determine that the request is bona fide. Mr. Hegland accomplishes this by contacting a physician familiar with the community and its medical needs or, when necessary, by a personal visit. Then, from the information supplied in each case and from his extensive knowledge of the state, Mr. Hegland compiles a description of the location that would be of interest to physicians and includes the name of the responsible person to contact in the community. The description of the location is added to the listing of opportunities for practice sent to physicians who contact his office.

When first informed of the need of a given community, Mr. Hegland uses one of several methods to aid the community: (1) if possible, he makes a personal visit to discuss the problems of the community with some of the leaders, (2) when this is not possible, he arranges with a physician from the surrounding territory to perform this service. Usually, he writes a letter to the contact person informing him that the placement service office is aware of the situation. In this letter he includes a reprint of part of the booklet "Physicians Placement Service, 1950," which was published by the American Medical Association. The section reproduced describes what a community can do about its medical care. It first urges that the community objectively analyze the situation by answering three prime questions: 1. Do the people of the community need and desire a resident physician? 2. Why has a resident physician not already located in the community or why did previous physicians leave? 3. What are the most feasible ways of securing the services of a well-trained physician? Self-analysis provides the answer to the first two questions, and the third is answered in the remain-

der of the reprint, which offers suggestions. The necessity for a hospital or clinic facilities for practicing medicine is pointed out. Arrangements that can be made with nearby hospitals are described in the event that the community does not have or cannot support facilities locally that a physician could use. It is further pointed out to the community that establishing a practice involves considerable initial expense, which often prevents a young physician from going into a rural area. The community is reminded that office space, housing, and funds for initial expense are needed by a physician, if assistance for obtaining these needs is available, it is recommended that this be made known.

So that the community, after considering the factors described in the reprint, may contact the physicians desiring to practice in Montana, Mr. Hegland includes in his letter a complete list of the available physicians, with information on each. The community is advised that it should contact these physicians in an attempt to attract one to establish in the area, the community is also advised that it is their responsibility to complete all arrangements with the physician and to support his practice after he locates there. From time to time, as a new list of physicians is compiled, copies are sent to the communities interested in obtaining a physician.

FUTURE EXPANSION OF PLACEMENT SERVICE

To further develop the Physicians Placement Service a special subcommittee has been appointed from the public relations committee of the Montana Medical Association. This subcommittee is to develop informational questionnaires to be executed by physicians seeking locations and communities seeking a physician, so that full information may be available to interested persons. In addition, from this subcommittee a panel of visiting physicians is to visit communities that believe they are in need of physicians. The panel is to evaluate the actual need, and if the need does exist, the panel will help in obtaining a physician. If a physician is not needed the panel will aid the community with suggestions in developing methods for meeting their medical needs, such as organizing an ambulance service or encouraging a nearby physician to hold office hours there each week. This part of the program is in the formative stage, it will be a valuable additional service to the state placement program.

BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Privileged Communications Privilege Once Waived Ceases to Exist—This was an action for damages for breach of a contract for personal services. From a judgment in favor of the plaintiff, the defendant appealed to the supreme court, appellate division, first department, New York.

The plaintiff was hired as head football coach by the New York Yankees, a professional football team. After the contract had run for five months, the plaintiff became ill and was taken to a hospital, where he remained for about one month. During this period he was examined by three physicians, two of whom said he had had a coronary thrombosis and one of whom, Dr. Palatucci, said he had never had a coronary thrombosis. The defendant admitted that he terminated the plaintiff's employment but contended that such termination was justified because of the plaintiff's physical incapacity to fulfill the terms of the contract. At the trial no medical witnesses were called by the plaintiff. However, the defendant called the three physicians who had attended the plaintiff. With respect to the first physician, a Dr. Kossman, who examined the plaintiff on July 24, 1951, the plaintiff's claim of privilege was sustained by the trial court. When the second physician, Dr. Palatucci, who examined the plaintiff on July 20, 1951, after his discharge from the hospital, was called by the defendant the plaintiff did not object to the receipt of his testimony. The trial court while Dr. Palatucci was on the stand advised the plaintiff that he was waiving

his privilege as to Dr. Palatucci's testimony. Nevertheless the plaintiff did not object to the introduction of that evidence. Dr. Palatucci testified that he had familiarized himself with the hospital records of the plaintiff's case, including the diagnosis of coronary thrombosis by Dr. Fischl. The defendant then called Dr. Fischl, who had attended the plaintiff in the hospital. The plaintiff then claimed privilege against the receipt of Dr. Fischl's testimony, and the court sustained the objection on the ground that the receipt of Dr. Palatucci's testimony did not amount to a waiver as to the testimony of Dr. Fischl or the hospital records.

We find error in this ruling, said the court. The law is well established in this state that the patient waives the privilege as to his physician's testimony by failing to object to such testimony when the physician is called by the other party, and further, that the privilege once waived is waived for all time. The waiver is not confined to the particular physician who testifies, but extends to any other physician who has examined the plaintiff concerning the particular ailment involved. Though Dr. Palatucci testified that he found an absence of the specified disease, his testimony disclosed that another physician had found it present. We think, said the court, that this was a disclosure which could not be recalled. This error, which left the jury with only one side of the medical proof on the basic question in the case, requires reversal of the judgment. Accordingly the judgment in favor of the plaintiff was reversed and a new trial was granted. *Strader v. Collins*, 116 N. Y. S. (2d) 318 (New York, 1952).

Hospitals in General. Suit by Hospital to Recover for Surgical Services of Staff Physician—This was an action to recover the value of hospital and medical services rendered by the plaintiff at the express or implied request of the defendant patient. The case was tried in the municipal court of the city of New York, borough of Manhattan.

The plaintiff injured his left arm and shoulder in an accidental fall in a theater lobby and was taken to the Beekman Downtown Hospital for treatment. He received medical, surgical, and hospital care for 22 days and then visited the outpatient department of the hospital for about a month. He then had another accident at home as a result of which he injured his right leg. He was readmitted to the plaintiff hospital and remained there for a period of 26 days, and the present suit is a claim made for the second period of his hospitalization. During this second period of hospitalization, the plaintiff received the routine bed board, and nursing treatment, x-rays, physiotherapy treatments, special medicines, drugs, laboratory services, and special medical and surgical treatment. Part of this latter treatment consisted of an operation for the evacuation of a hematoma. An examination of the bill of particulars, said the court, reveals that the defendant at one time or another during the two periods of hospitalization received medical or surgical care from seven physicians and surgeons. The defendant conceded that all charges were fair and reasonable and recoverable except those items that were charges for surgical services. The objection to these services was primarily based on the fact that the plaintiff was not the real party in interest and that if a recovery was allowed to the plaintiff it would not bar an independent action brought by the surgeon for such services.

Concededly said the court the defendant was an ambulance patient treated in the ward of the plaintiff hospital as such he has no freedom of choice or of contract or terms in respect of a physician who attends him at such hospital. It would appear therefore that there is no contractual relationship either express or implied in law upon which any such treating surgeon could predicate a cause of action against a ward patient. This principle the court added would apparently not prevail in a private proprietary hospital where an admitting patient selects his own physician and where accommodations are characterized as either private or semiprivate rooms.

Accordingly, therefore the court held that the hospital was entitled to recover for the amount of the surgical services that were rendered to the defendant by the hospital staff physicians. *Beekman Downtown Hospital v. Murphy*, 116 N. Y. S. (2d) 341 (New York, 1952).

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Nickerson-Kveim Reaction in Sarcoidosis L. E. Siltzbach and J. C. Ehrlich *Am J Med* 16 790-803 (June) 1954 [New York]

The Nickerson-Kveim cutaneous test for sarcoidosis consisting of the intradermal injection of 0.1 to 0.2 cc of a heat-sterilized suspension of human sarcoid tissue (usually lymph nodes or spleen) into the volar aspect of the forearm, with biopsy of the test area four to six weeks after the injection, was practiced in 80 men and 120 women. Fifty-eight patients had sarcoidosis confirmed by biopsy of an involved organ or tissue. Eighty patients were suspected of having sarcoidosis, and in 33 of these the suspicion was strong. Fifty-four patients had diseases other than sarcoidosis, and they served as controls. The remaining eight patients had unclassified granulomatous disorders. Results of 571 tests performed on the 200 patients over a seven year period showed that 50 (86%) of the 58 patients with sarcoidosis confirmed by biopsy and 28 (85%) of the 33 patients in whom sarcoidosis was strongly suspected gave microscopically positive responses to the test, having a reaction characterized by the production of tuberculoid granulomas resembling those of sarcoidosis. Two of the 54 control patients gave positive responses to the test, an incidence of 4% of false positive reactions, which may be considered a satisfactorily low rate for a biological test. Foreign body reactions and nonspecific reactions sometimes interfered with the microscopic reading of the test. Suspensions of normal lymph nodes and normal spleen did not elicit a positive reaction in patients with sarcoidosis who did respond to a suspension of sarcoid tissue. The Nickerson-Kveim intracutaneous test is a useful confirmatory tool in the diagnosis of sarcoidosis. The test is of aid especially when tissues from involved organs are not readily accessible to biopsy. The test is growing applicability in differentiating granulomatous conditions. In such cases the result of the Nickerson-Kveim test can also be a determining factor in the choice of proper therapy.

Malignant Carcinoid of the Small Intestine with Metastases to the Liver, Valvular Disease of the Right Side of the Heart (Pulmonary Stenosis and Tricuspid Regurgitation Without Septal Defects), Peripheral Vasomotor Symptoms, Bronchoconstriction, and an Unusual Type of Cyanosis. A Clinical and Pathologic Syndrome Å. Thorson, G. Björck, G. Björkman and J. Waldenström *Am Heart J* 47 795-817 (June) 1954 [St. Louis]

The occurrence of both pulmonary stenosis and malignant carcinoid of the small intestine is reported in eight men and six women between the ages of 19 and 64 and in two additional patients, whose sex and age were not recorded. The simultaneous occurrence of both conditions makes this unsuspected combination a clinical and pathological syndrome and not a pure coincidence. The principal findings and symptoms of the syndrome were (1) malignant carcinoid of the small intestine with slow progression and metastases to the liver and to other parenchymatous intra-abdominal organs, common symptoms being dependent edema, frequent watery stools, borborygmi and abdominal pain and rarer symptoms being ascites and pleural effusion, (2) generalized widening of the small vessels of the skin, telangiectases in some patients, and pellagra-like cutaneous

lesions in several patients, (3) plethoric coloration and total or partial cyanosis in the absence of polycythemia and a peculiar patchy flushing of the skin, in some cases combined with pilomotor symptoms, (4) pulmonary stenosis of the valvular type and tricuspid regurgitation, and (5) attacks of "bronchial asthma" of a rather unusual type, the chief features of which were cyanosis, "exanthema" over the face and body, and sudden dyspnea. Of the 16 patients, 7 definitely had the new syndrome, 4 probably had it, and 5 had partial or not fully verified symptoms. The cause of the syndrome is believed to be a malignant carcinoid of the small intestine with hormonal properties and extensive metastases to the liver. This concept is based on the fact that the flushes or plethoric discoloration of the skin, which were the most outstanding and easily visible findings, occurred suddenly, showed an irregular distribution and color, and seemed to represent various stages of contraction or dilatation in both precapillary arteries and capillaries. During the generalized red flush, quickened heart rate and large pulse pressure often occurred. After a period of extensive flushing, there usually followed a period without flush, which may indicate a release of vasomotorically active substances. Among substances of this type at present known, 5-hydroxytryptamine (Enteramine or Serotonin) is the one that in its effects seems most likely to correspond with the signs and symptoms of the syndrome. It has recently been extracted by another worker in considerable amounts from a carcinoid tumor found at necropsy.

Medicinal Treatment of Obesity with a New Type of Hydantoin D. Janz and F. Bahner *Deutsche med. Wchnschr.* 79 846-849 (May 21) 1954 (In German) [Stuttgart, Germany]

Methylidibromostyrylhydantoin (Pesomin) was given to 18 female and 4 male obese patients between the ages of 8 and 52 years. The drug was available in sugar-coated tablets of 0.27 gm. Five to seven tablets were given daily for several months in two to three single doses with the meals. In 21 patients loss of weight was obtained depending on the dose of the drug and on the individual response to the drug. Three patients lost up to 1 kg. per month, nine up to 2 kg., two up to 3 kg., four up to 4 kg., and three up to 5 kg. The greatest loss of weight obtained was 22.5 kg. in seven months and 18 kg. in four months. The daily dose required for most patients was six tablets, but a lasting effect was obtained in several patients with five tablets, while seven tablets daily were required occasionally. Of a second group of 19 patients with neurological diseases and normal body weight who were given methylidibromostyrylhydantoin for 3 to 22 months, 6 had an average loss of 1 kg. per month, 8 had an average loss of 1.4 kg., 4 lost up to 2.2 kg. per month, and 1 patient had no loss of weight. The obese patients showed a more pronounced response to the drug than patients with normal body weight. To prevent the occurrence of "allergic" reactions, such as pruritus, general weakness, and rash similar to that of scarlet fever, measles, or German measles, associated with fever, swelling of cervical lymph nodes, and eosinophilia, it is advisable to start the treatment with one tablet daily for eight days and to continue with two tablets for the next seven days, three tablets for the next six days, four tablets for the next five days, five tablets for the next four days, and then to give six or seven tablets daily. Undesirable side-effects, such as atrophy of gums, gastrointestinal disturbances, agranulocytosis, nystagmus, vertigo or ataxia, were not observed. The absence of cardiac or circulatory disturbances such as palpitation or tachycardia was a notable advantage of the drug as compared to active thyroid substances. The effect of the new hydantoin derivative did not depend on the cause of the obesity, since loss of weight occurred similarly in patients with genuine and with symptomatic obesity. The effect of the drug was manifested by a change in quality of appetite and a diminished sensation of hunger. An increase in basal metabolic functions did not occur. It is suggested that methylidibromostyrylhydantoin may exert a direct effect on the central regulation. The new drug is suitable for ambulatory as

The place of publication of the periodicals appears in brackets preceding each abstract.

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well as for hospital treatment since with gradually increased dosage after institution of the treatment it does not cause undesirable side-effects even when given in large doses and continued for many months

Problems of Diabetes Mellitus: Investigation on Incidence and on Influence of Age and Nutrition on Manifestations of Diabetes Mellitus. V Schliack. *Deutsche med Wchnschr* 79 855 856 (May 21) 1954 (In German) [Stuttgart, Germany]

The author compared the ages and the sex of the population with diabetes mellitus of the cities of Leipzig, East and West Berlin, and Vienna. Of the 2 million inhabitants of West Berlin, 11,294 had manifest diabetes mellitus. The highest incidence of the disease was observed in the sixth decade of life, predominating in women after the 40th year of life. The sex ratio was temporarily changed by the deficient nutrition during the war and postwar period, which had the significance of a mass experiment. The number of manifestations depended definitely on the supply of calories. The content of fat in the food seemed to have an important part. Reports in the German literature on the incidence of diabetes mellitus in postwar Germany differed between 1 and 6 per 1,000. The author's recent study of the incidence of diabetes mellitus among the rural population and the population of small towns in the district of Mecklenburg, Germany, revealed an incidence of 1.5%, i.e., the same as that determined by Joslin in North America. This suggests a more even distribution of the diathesis than has been assumed so far. The large number of previously undetected cases of the disease is stressed, systematic examinations of the entire population revealed for one known diabetic patient five additional persons with diabetes. The sociomedical postulate of prophylaxis and early treatment in the primary stage, when regression of the disease is still possible, could be fulfilled if the diagnosis were not left to chance. The age and sex specificity revealed by the author's study, the regulatory character of the disease, the hereditary disposition, the relationship to obesity and over-nutrition, and the prevention of manifestations of the disease by limiting luxury consumption, make properly directed prophylaxis possible.

Long Term Anticoagulant Therapy: Further Experiences. J Tulloch and L S Wright. *Circulation* 9 823-834 (June) 1954 [New York]

This report is based on 227 patients treated with anticoagulants as outpatients for at least four weeks consecutively. One hundred eighty-two received bishydroxycoumarin (Dicumarol) for a total of 59,104 days, and 53 received ethyl biscoumatate (Tromexan) for 6,743 days. Twenty-six out of the 227 patients (11.4%) experienced a total of 40 definite or possible thromboembolic complications, while 43 patients (18.9%) had 70 hemorrhagic complications. Thirty-three (14.5%) acquired a very high prothrombin time (well over 40 seconds) on 51 occasions without the occurrence of bleeding. There were 20 deaths, which, in general, were unrelated to anticoagulant therapy, only one death was caused by hemorrhage. There was substantial evidence that the treatment was of benefit to this series of patients. It must be remembered that only patients with severe heart or vascular disease who were suffering from recurrent thromboembolic episodes were included (with the exception of eight cases of glaucoma). The authors conclude that, where adequate laboratory facilities are available, outpatient long term anticoagulant therapy may be instituted by any physician familiar with the use of anticoagulant drugs. Definite thromboembolic episodes are most likely to occur when the prothrombin time is less than 20 seconds, and hemorrhagic complications are commonest when the prothrombin time is over 40 seconds. Minor trauma will induce local bleeding at any level of prolongation of the prothrombin time. Vitamin K and, especially, Vitamin K₁ are of value in the treatment of the hemorrhagic complications associated with prolonged prothrombin times (diminished prothrombin activity in the blood). Surgery may, in most instances, be undertaken with safety by temporarily lowering the prothrombin time to near the normal level, anticoagulant therapy should be resumed on the first or second postoperative day, if possible.

Potassium Deficiency in Congestive Heart Failure: Three Cases with Hyponatraemia, Including Results of Potassium Replacement in One Case. J H Cort and H L Matthews. *Lancet* 1 1202-1206 (June 12) 1954 [London, England]

Three patients with congestive heart failure, resistance to mercurial diuretics, and hyponatraemia were submitted to electrolyte tissue analysis of muscle biopsy specimens. These studies showed a large deficit of potassium and overhydration in the cells. The sodium content of the cells was also probably increased. Two patients died suddenly shortly after biopsy was completed and potassium therapy instituted. The third was treated with a high potassium intake and the maintenance of digitalis but no mercurials. Balance studies were continued during therapy, and a second muscle biopsy was done 50 days after the first Potassium therapy was associated with the following changes: the electrolyte and water composition of muscle was completely corrected, edema was decreased, cyanosis disappeared, there was considerable clinical improvement, hyponatraemia was corrected and sodium began to be excreted in the urine. Hyponatraemia appears to be an end stage of a prolonged loss of potassium either caused or complicated by the administration of mercurials, and it is more likely than that potassium deficiency plays a part in the clinical picture of congestive failure and masks the true extent of debility caused by hemodynamic insufficiency alone. The question may be raised whether attention to potassium balance should not have a more important part in the treatment of congestive failure.

Increased Cerebrospinal Fluid Pressure and Papilledema in Malignant Hypertension. R. D Taylor, A C Corcoran and I H Page. *A M A Arch Int Med* 93 818-824 (June) 1954 [Chicago]

In a study of the association of cerebrospinal fluid pressure, diastolic arterial pressure, and papilledema, more than 400 measurements of cerebrospinal fluid pressure were made on 200 patients, 100 of whom had essential hypertension without papilledema, and 100 of whom had malignant hypertension with manifest papilledema. No association between diastolic pressure and cerebrospinal fluid pressure was observed in the hypertensive patients without papilledema. In the hypertensive patients with papilledema the statistically significant correlation was not sufficient to indicate causation, since patients without papilledema showed elevated cerebrospinal fluid pressure and patients with severely elevated diastolic pressures were often free of papilledema. Similarly, in serial observations on patients whose papilledema altered in severity, remitted, or recurred, no close association between these changes and the cerebrospinal fluid pressure could be demonstrated. Serial observations of the cerebrospinal fluid pressure in individual patients showed considerable fluctuations in this function, independent of diastolic pressure. Papilledema and increased cerebrospinal fluid pressure, like hypertensive encephalopathy, are to be regarded as specific manifestations of hypertensive disease, unrelated as to cause and effect. Comparison by means of the Ayala index (used as a relative measure of intracranial tissue volume) between patients with and those without papilledema indicated that papilledema is not associated with any evident increase in brain volume. Further, papilledema and increased cerebrospinal fluid pressure cannot be attributed to increased cerebrospinal fluid volume. Cerebral blood flow is not increased in patients with severe hypertension. If brain volume, cerebrospinal fluid volume, and cerebral blood flow are relatively normal in severe hypertension, increased cerebrospinal fluid pressure observed in many patients with hypertensive disease may, by exclusion, be attributed to distention of cerebral vessels.

Antibiotics in Inoperable Renal Tuberculosis. A Krnstenson. *Nord med* 51 671-675 (May 13) 1954 (In Swedish) [Stockholm, Sweden]

Five cases with extensive destructive tuberculous changes in both kidneys or in the kidney remaining after nephrectomy are described. In three cases there were tuberculous changes in the bladder in four there were pulmonary changes in varying extent, with tuberculous empyema and a tuberculous joint affection in one case. Urography, retrograde pyelography, and

aortography gave information on the condition of the kidneys. Changes in the urine were present in all cases: albuminuria, sediment of red and white blood corpuscles in different amounts, and tubercle bacilli demonstrated by direct test, inoculation and culture. After *p*-aminosalicylic acid (PAS) treatment followed by treatment with streptomycin, isoniazid, and finally penicillin, subjective and objective symptoms diminished or disappeared. The roentgenologic changes did not progress. In three cases the urine was normalized. The tuberculous pulmonary changes and the tuberculous joint affection showed regression and healing. The improvement has been maintained after the end of treatment for several years in three cases and during a shorter observation time in two cases. To a large extent Kristenson advocates conservative treatment with intensive chemotherapy in renal tuberculosis, completed if necessary by surgical treatment.

How to Prevent Crippling in Rheumatoid Arthritis M Kelly
Lancet 1 1158-1161 (June 5) 1954 [London, England]

Why do some patients with rheumatoid polyarthritis become bedridden? Nine out of 10 bedridden patients relate the same sequence: 1 The knees became painful and swollen, and the quadriceps muscles wasted away. 2 The patient walked less and less. 3 He could not straighten his knees. 4 He could not walk and took to wheel chair or bed. 5 His arms became fixed and his hands powerless. The patient takes to his bed for a flexion deformity of the knees. If one knee can be straightened, the patient will walk. While he can walk and dress himself daily he will do enough to keep his muscles active and his other joints mobile. When he stops walking, the muscles waste away, the bones are decalcified, and the joint capsules become fibrosed. Prolonged rest in bed is disastrous. The patient can be assured that he will walk so long as he can straighten his knees. And he can be assured that he will use his hands so long as he prevents his hands from drooping and facing downwards. The knee that threatens deformity always has a weakened quadriceps, which must be strengthened. Flexion must be avoided. The patient should keep the knees straight when he is sitting or lying. A very weak quadriceps should be supported by a straight caliper. If the knee is not painful or swollen, the caliper may be removed at night, but it is better to wear it continuously for a week or two. Flexion always returns with ordinary use of the limb, and it should not be sought by forcible active or passive movements. If the patient cannot straighten his knee, it can usually be straightened under anesthesia, the caliper fixed on, and the patient allowed to walk with crutches. Swelling of the joint does not contraindicate forcible extension. Deformity of the wrist can be prevented by continuous immobilization in plaster splints that allow the fingers to be used and the hand to be rotated. Arthritic joints that are immobilized for a few weeks do not ankylose.

Mass Oral Penicillin Prophylaxis in Control of Streptococcal Disease S H Bernstein, H A Feldman, O F Harper Jr and W H Klingensmith A M A Arch Int Med 93 894-898 (June) 1954 [Chicago]

Approximately 5,500 recruits received prophylactically 250,000 units of penicillin orally twice daily for 10 days, while a similar number of recruits served as untreated controls. The Group A Streptococcus disease rates before penicillin prophylaxis was instituted were 13 per 1,000 per week in the group to be treated and 17 per 1,000 in the control group. The hospital admissions for streptococcal disease diminished sharply within 48 hours in the treated group, the disease rate for that week was 2 per 1,000 and the following week, 1.5 per 1,000. In contrast, the equivalent rates in the control group were 13 per 1,000 per week and 11 per 1,000 per week. The streptococcal disease rate in the treated group was maintained at a lowered level for the next five to six weeks. In a second mass penicillin trial performed three months later, the prophylactic effect of the antibiotic was similar to that observed in the preceding trial, and the disease rate fell from 10 per 1,000 per week to less than 1 per 1,000 per week. The percentage of positive cultures obtained from the throats of apparently healthy trainees were affected similarly in both mass penicillin trials. The incidence

of untoward reactions to penicillin was extremely low during both field trials. Since the serologic types that were found in the hospitalized patients with streptococcal pharyngitis remained constant, it appears that the mass prophylaxis suppressed but did not eliminate the offending organisms. Although the data reported demonstrate that 250,000 units of penicillin orally administered twice daily will effectively control a group A Streptococcus epidemic in a closed population, it is evident that the optimal dosage schedule still remains to be determined.

Epidemic Nephropathy. B Tunlgand Nord med 51 635 639 (May 6) 1954 (In Norwegian) [Stockholm, Sweden]

Epidemic nephropathy, observed only in Finland, Sweden, and Norway, was unknown until 30 years ago. It is an acute infectious disease with special affinity for the kidneys and occurs only in the winter months. There is transient renal insufficiency with isohyposthenuria and azotemia. The disorder sets in suddenly, often with fever and chills. In Hedmark District Hospital, from late 1948 to 1950, 28 patients (26 males, two females) were treated under the diagnosis of epidemic nephropathy. Half the patients were woodsmen. Headache and backache were the commonest symptoms, in 16 cases intense abdominal pain dominated the picture. Transient impairment of vision occurred in three instances. All but one of the patients had proteinuria lasting an average of 11 days. Polyuria, beginning in the second week, lasted about a week. The diagnosis on admission was usually acute nephritis or epidemic nephropathy. The influenza-like character of the disorder suggests a virus infection. Evidence points to transmission by rodents, but the disease has not yet been demonstrated in mice. Treatment consisted of rest in bed and diet low in protein and salt. The prognosis is believed to be good. Follow-up of 10 patients after five years revealed no renal injury.

Functional Disorders of the Intestinal Tract. H. I Sippy Rocky Mountain M J 51 512-516 (June) 1954 [Denver]

Sippy feels that the term "irritable bowel" or, more particularly "irritable colon," has been the subject to the erroneous interpretation that only the colon is concerned in these conditions. Physiologically and anatomically, the small intestine is fully as vulnerable as the colon to instability and derangement. Nervous irritability, abuse by cathartics or enemas, and fermentation are the chief causes of bowel dysfunction, but in addition there are numerous accessory causative factors. These include chilling either by external exposure or ingested material, infections, especially the toxins of respiratory infections often misnamed "intestinal flu", emotional crises, fatigue, endocrine disorders, allergic reactions, and excessive intake of highly laxative foods, such as cabbage, sauerkraut, corn, and many fruits or fruit juices. The leading symptom of a functional bowel disorder is usually abdominal distress. This tends to be variable in location and degree. When in the left upper abdomen, it sometimes radiates upward into the chest and arouses suspicion of a cardiovascular source. The distress is intermittent or remittant with a tendency to recur over prolonged periods. Descriptions vary from vague discomfort and sensations of fullness to violently cramping colic. Some relief is usually obtained by applying heat to the abdomen, or taking hot foods and drinks, and by defecation, belching, or the expulsion of flatus. Constipation, diarrhea, flatulence, anorexia and nausea are other manifestations of irritable bowel. These functional bowel disorders are extremely prevalent, and their recognition and treatment are grossly neglected. Physical examination reveals little except a tender and sometimes rope-like colon. Diagnosis is accomplished largely by exclusion of organic disease. Treatment must be individualized.

Clinical Criteria and Surgical Indications for Treatment of Duodenal Ulcer. F Soave Minerva med 45 922-926 (April 4) 1954 (In Italian) [Turin, Italy]

Approximately 86% of patients with duodenal ulcer recover in from 8 to 15 months with adequate medical therapy and an appropriate diet. In the remaining 14% surgery must be done. It is a clinical error to continue medical therapy when this has not given good results in 6 to 15 months. The ulcerative process

will progress, and hemorrhage, pancreatitis, duodenal obstruction, and painful syndrome in the right upper part of the abdomen may develop. Hemorrhage is one of the commonest complications of duodenal ulcer. It is generally controlled with conservative treatment in patients between the ages of 25 and 35 years except for 4.5 to 5% of cases. Soave postpones the subtotal gastrectomy in these patients until the hemorrhage has been checked. Because a sclerotic process of the arteries may be present, the hemorrhage may be severer and more difficult to control medically in patients over 45 years of age. In these, one should assume that a branch of the pancreaticoduodenal artery or of the left gastric artery is eroded by the process, and the most rational intervention is simple ligation of the bleeding vessel. This should be done rather soon. Surgical intervention is urgent for patients in whom, despite transfusions, the circulating blood has reached values below 60% of the total volume. Another complication of duodenal ulcer is pyloroduodenal obstruction. Soave states that at the University of Genoa surgical clinic subtotal gastrectomy according to Polya is the intervention of choice for duodenal ulcer. This intervention and the one of Hofmeister reduce to 2 to 3% the dumping syndrome symptoms. According to some authors this condition is caused by a sudden distention of the anastomosed jejunal loop; others say that it is the result of too rapid a passage of undigested food into the jejunum. A complication of subtotal gastrectomy is pancreatitis of the head of the pancreas. This is not a severe complication of itself, but the tryptic ferments may digest the catgut that was used to suture the duodenal stump. If this is not completely healed, an external biliary fistula or biliary peritonitis may result. Vagotomy, alone or combined with gastroenteroanastomosis, does not give satisfying results in the treatment of duodenal ulcer. It may some times be indicated for patients in whom disturbances continue to be present after they have undergone a gastroenteroanastomosis and a resection. If the disturbances were due to the cephalic phase of the gastric secretion, the patient will benefit from the operation. Vagotomy alone should never be used in the treatment of duodenal ulcer.

Treatment of Leukemia J H Burchenal. *Bull New York Acad Med* 30 429-447 (June) 1954 [New York]

The therapeutic agents available for treatment of leukemia are irradiation and chemotherapy. In acute leukemia the sequential use of the antimetabolites, amethopterin, aminopterin, and 6-mercaptopurine, and the hormones, corticotropin and cortisone, may be expected to produce beneficial effects with an increase in survival time in a high percentage of children. Definite but less frequent beneficial effects have been noted in adults with mercaptopurine. The author makes a plea for the treatment of all cases of acute leukemia. Too often the attitude is that there is no cure for the disease. The answer to that is fourfold: the untreated patient does not usually die in peace but frequently suffers many painful complications under therapy; many of these children can live happy lives, continuing in school and playing as normal children, during this time the family have time to adjust to the situation, and, most important, if these patients can be kept alive for another year or two, who can say that some investigator somewhere will not come forth with a really effective agent to control the disease? In chronic myelocytic leukemia Myleran (1,4-dimethanesulfonyloxybutane), triethylenemelamine (TEM), urethane arsenic, and the nitrogen mustard HN are useful chemotherapeutic agents, 6-mercaptopurine is still under evaluation in this form of the disease and may prove to be of considerable value. The treatment to be used in chronic myelocytic leukemia depends largely on the available facilities. If adequate equipment and personnel are available, radiation therapy either by local or total body x-ray or phosphorus 32 therapy offer perhaps a wider range of applicability and technique than any of the chemotherapeutic agents. In chronic lymphocytic leukemia, the only chemical agents of value are the mustard derivatives, triethylenemelamine, nitrogen mustard HN, the hormones and possibly urethane. Specific therapy is only one aspect of the therapy of leukemia. Transfusions should be given as often as necessary to combat anemia, and antibiotics should be employed whenever serious infection threatens the patient. The maintenance

of morale is also an important factor, and for this reason the patients should be allowed to live as normal a life as possible. Most patients with chronic myelocytic leukemia can continue to work up to within a month or two of the time of death.

Leukemia in Atomic Bomb Survivors: I. General Observations R D Lange, W C. Moloney and T Yamawaki. *Blood* 9 574-585 (June) 1954 [New York]

Seventy-five established cases of leukemia occurred in atomic bomb survivors in Hiroshima and Nagasaki up to Dec 31, 1952. There were 38 men and 37 women. The leukemogenic effects of radiation were manifested equally in both sexes and at all age levels represented in this series. In the 76,891 survivors who at the time of the bombing were at a distance less than 2,500 m from the point on the ground immediately below the bomb burst (hypocenter), 65 cases of leukemia were found, while in the combined total of 159,285 persons who were beyond 2,500 m and survived in both cities, there were only 10 cases of leukemia. These data indicate a great increase in the incidence of leukemia among atomic bomb survivors due to a single massive exposure to ionizing radiation. Concerning the type of leukemia occurring among atomic bomb survivors, 31 (41%) of the 75 patients had chronic myelogenous leukemia and 20 (26%) had acute myelogenous leukemia, while only one case of chronic lymphatic leukemia was observed among the 75 exposed survivors. The preponderance of chronic myelogenous leukemia as compared with chronic lymphatic leukemia in the exposed survivors is striking, but it is pointed out that chronic lymphatic leukemia is comparatively rare among the Japanese. Cases of leukemia are still appearing in atomic bomb survivors. There has been a steady decline in the number of cases since 1950.

SURGERY

Surgical Treatment of Hypertension J E Thompson and R H. Smithwick. *Cincinnati J Med* 35 203-207 (June) 1954 [Cincinnati]

During the past 15 years Thompson and Smithwick studied 3,500 patients with hypertension. Over 2,400 of these have been operated on, and the rest have been treated medically. One thousand two hundred sixty-six surgically treated patients and 467 medically treated control patients have been followed five years or longer. The authors classify hypertensive patients into four groups by assigning a numerical value to each of several factors that determine the prognosis. The numerical value of one is applied to an abnormal electrocardiogram, an enlarged heart, impending congestive failure, mild angina, age over 50, a cerebrovascular accident without or with minor residual, and phenolsulfonphthalein excretion of less than 25% in 15 minutes or less than 60% in 2 hours. The value of two is applied to cerebrovascular accident, with residual, frank congestive failure, moderate angina, phenolsulfonphthalein excretion of less than 20% in 15 minutes, and unsatisfactory response to sedation. A numerical value of three is assigned to phenolsulfonphthalein excretion of less than 15% in 15 minutes. Nitrogen retention is given the numerical value of four. In the patients of the first two groups the numerical values total up to less than four and in those belonging to groups 3 and 4 the values total 4 or more. The authors used thoracolumbar splanchnicectomy in 93% of surgically treated patients with essential or malignant hypertension. The remaining patients were treated by transthoracic sympathectomy. The sympathetic trunks are removed from D₁ to L₁ inclusive, together with the greater and lesser splanchnic nerves. It was found that the mortality rates in all four surgically treated groups were significantly lower than those of corresponding medically treated groups. This was especially so for groups 2 and 3, where the differences are highly significant. Group 1 patients are usually treated by diet and drugs, but the authors feel that surgery may be employed in this group for young male patients with high resting diastolic blood pressure levels (above 110), or those with intractable symptoms for women with a history of toxemia or other complications of pregnancy associated with hypertension who desire more children, and for those who for various reasons are unable to follow a medical regimen.

For group 2 and group 3 patients splachnicectomy is the treatment of first choice. In group 4 cases surgery may be recommended, provided renal function is adequate. The one positive contraindication to splachnicectomy is severe kidney damage as indicated by persistent evidence of nitrogen retention.

Congenital Hernia of the Diaphragm with Report of Three Cases W. A. Arneson. *South Dakota J. Med. & Pharm.* 7:167-171 (June) 1954 [Sioux Falls, S. D.]

According to Arneson there are several types of congenital diaphragmatic hernias. This discussion is limited to the posterolateral or pleuroperitoneal type, which comprises 90% of all these hernias. More than 80% of these occur on the left side, and almost all have no hernial sac. The involved chest cavity is completely filled with intestine and other abdominal viscera with resultant collapse of the lung and displacement of the heart to the opposite side. Posterolateral hernias may produce symptoms referable to the circulatory, respiratory, or gastrointestinal systems, as shown by cyanosis, dyspnea, or vomiting. The majority of the infants have symptoms immediately after birth, but others are able to tolerate the gross displacement of organs for many months with few symptoms. On physical examination breath sounds are slight or absent, but intestinal peristaltic sounds may be heard, and the abdomen may be scaphoid. In the presence of these signs, a chest roentgenogram will make the diagnosis conclusive by showing intestinal loops replacing the lung and displacing the heart. Although barium by mouth will give a dramatic picture, it should be avoided, since it is unnecessary and may cause intestinal obstruction. Before operation these infants should be properly hydrated and the intestinal tract should be deflated. Operation should be undertaken within 24 or 48 hours. An abdominal approach is preferable to a thoracic one. In the peritoneal cavity a catheter may be inserted into the chest through the hernial opening to allow air to enter the pleural space. This facilitates removal of the stomach and intestines from the chest and prevents their being sucked back in while being delivered. The order of delivery is first the stomach, then the small intestine and then the colon and spleen. They should be kept outside the abdomen in warm moist packs while the hernial opening is closed. A malrotation should be corrected if present. Two of the three infants, whose cases are presented, survived the operation. Literature reports indicate that since 1940 the survival rate has been 90%.

Disturbances of Anastomosis in Billroth 1 Stomach H. Schumann. *Beitr. klin. Chir.* 188:316-327 (No. 3) 1954 (In German) [Munich, Germany]

The original Billroth 1 operation was performed on 430 patients with gastric ulcers, or on 56% of all patients operated on for ulcers of the stomach at the surgical department of the Southern City Hospital in Lubeck, Germany, since 1936. Compared with the Billroth 2 technique, the Billroth 1 operation has the advantage of restoring the physiological function of the stomach to nearly normal by restoring the continuity of the stomach to small intestine course. Evacuation disturbances during the first postoperative days depend on the technical difficulty of performing a satisfactory anastomosis between the large lumen of the stomach and the small diameter of the duodenum, but experience makes possible correct estimation of the wound of the stomach to be kept open at the larger curvature. Early and frequent irrigation of the stomach is the method of choice for preventing atony of the stomach stump. The sanguinous fetid secretion of the stomach favors delay in evacuation during the first postoperative days. Technical difficulties of suture occur most frequently at the posterior lip of the anastomosis. The patient should be discharged from the hospital only after roentgenologic examination reveals proper evacuation of the stomach stump. Complaints of deficient evacuation by the patients after returning to their homes may be caused partly by the diet and partly by the mental state. The dumping syndrome, which frequently causes much suffering to patients operated on according to Billroth 2 technique, did not occur in patients subjected to the Billroth 1 operation. Recurrence of the ulcer was observed in 6 (1.5%) of the 430 patients. The aspect of the recurrent ulcer was typical in that it was limited to the duodenum and originated in the suture line between the duodenum

and the stomach. In most cases, the recurrent ulcer penetrated into the pancreas, and more rarely into the liver. The location of the ulcer suggests a peptic cause, the gastric juice apparently meets the duodenum in the area adjacent to the suture point, in a condition of lessened resistance. The author believes that duodenal adhesions combined with continued positive production of acid in the residual stomach are of pathogenic significance in anastomotic ulcers. A positive acid curve suggests an inadequate resection of the stomach. Resection of two thirds of the stomach is considered adequate, and may be performed safely according to Billroth 1 technique without the risk of tension on the suture. The Billroth 2 operation is preferable in patients with duodenal ulcer and ulcer of the pylorus.

Experience with Mitral Commissurotomy W. D. Close. *J. Indiana M. A.* 47:600-605 (June) 1954 [Indianapolis]

Mitral commissurotomy was attempted in 33 women and 20 men between the ages of 16 and 59 years, the average age for women being 35 years and for men 32 years. On the basis of the clinical picture including history, physical examination, roentgen ray examination, electrocardiogram, and occasionally cardiac catheterization, the 53 patients were grouped as follows: 28 (53%) were patients with pure mitral stenosis, and their symptoms were such that they would be placed in class 2 or 3 in the functional classifications suggested by the New York Heart Association (group B); 15 (28%) were patients with combined mitral stenosis and mitral insufficiency in whom it was thought that insufficiency was contributing little to the patient's disability and who were in class 2 or 3 (group C); 10 (19%) were patients whose lesion was predominantly an insufficiency or patients with predominant mitral stenosis who are placed in class 4 (group D). None of the author's patients was placed in group A, composed of those with rheumatic valvular disease who are essentially asymptomatic. Of the 53 patients, 4 died postoperatively while they were still in the hospital and one died during the surgical intervention. None of the patients died after leaving the hospital. One death resulted from a cerebral embolus, one from a torn ventricle, and three from cardiac insufficiency. The over-all mortality was 9%, and by groups the mortality rate was 8% in group B, 30% in group D, and there was no death in group C. Of the 48 patients who survived the surgical intervention, 2 had auricular or atrial clots that were so extensive and fixed that the atrium could not be entered, 8 patients were operated on only three months ago and, therefore, evaluation of the results is not yet possible. Of the remaining 38 patients who were followed for 4 to 25 months after the operation, 26 (67%) obtained good results and 12 (33%) poor results. Some patients are markedly improved and some have returned essentially to normal. The expected duration of the improvement or whether any are cured is unknown. It is not known whether stenosis will re-form or not. There is some evidence that it may re-form. There is a definite mortality and morbidity even in the best selected cases. The classification of patients in groups A through D as described was a definite help in determining the advisability of surgery and in prognosticating the results and mortality. Patients in group B will probably receive a good result. Patients in group C may receive a good result. Patients in group D should probably not be operated on except for rare cases. Patients in group A should not be operated on now, but should wait until the procedure has been fully evaluated.

Surgery of the Thymus Gland. Second (and Third) Thoughts G. Keynes. *Lancet* 1:1197-1202 (June 12) 1954 [London, England]

In discussing the question of whether thymectomy is beneficial to patients with myasthenia gravis, the author stresses the importance of distinguishing between those with thymic tumors and those without. The former group present a distinctly different clinical picture and therapeutic problem, they are better treated by roentgenologic methods followed by operation than by primary thymectomy. When the latter group is considered separately, it is seen that in those patients treated surgically results are superior to those in patients treated medically. The

author has operated on over 200 patients 21 of whom were children between the ages of $2\frac{1}{2}$ and 16 Laboratory experiments performed by Wilson on some of the thymus glands removed from these patients yielded a potent extract having a neuromuscular blocking action similar to that of tubocurarine This has been demonstrated both *in vitro* and *in vivo* It appears that the thymus gland is the primary source of this active substance not simply a storage organ, in view of the virulence of the neuromuscular failure associated with epithelial tumors of the gland

Evaluation of Surgical Treatment for Disturbances of the Thyroid Gland M Nordland and M A Nordland A M A Arch Surg 68 794-799 (June) 1954 [Chicago]

Of 1 473 patients subjected to thyroidectomy, 861 had variable degrees of hyperthyroidism, in the form of true toxic diffuse goiter (Graves's disease), toxic diffuse goiter, and nodular goiter Twenty-one of the 861 patients were children In the management of patients with hyperthyroidism, as seen today, the thiourates will have a definite small place as a preoperative measure Patients with very mild hyperthyroidism are still prepared for surgical intervention with strong iodine solution (Lugol's solution) alone Surgery is still the treatment of choice in most of the patients with goiter, including those with hyperthyroidism Surgery of the thyroid is safe, and technical complications can usually be averted with a technique aimed mainly at hemostasis Proper hemostasis makes possible a faster, neater, cleaner and more practicable operation offering better protection to the laryngeal nerves and parathyroid bodies The justification for the preliminary application of a ligature to the inferior thyroid artery is the simplicity and speed with which it is accomplished It was shown by the authors' dissections and by other workers that the inferior thyroid artery is uniformly larger by one-third than the superior thyroid artery in both normal and disturbed glands It was demonstrated experimentally by Enderlen and Holtz that the blood supply of the parathyroid is not interfered with even after the ligation of all four thyroid arteries at their points of origin Ligatures were applied to the four thyroid arteries preliminary to thyroidectomy in the authors 1,437 patients and no damage was done to the parathyroid bodies The generous collateral circulation established between the internal laryngeal, internal mammary and transtracheal vessels together with the preservation of the posterior capsule over the trachea, left an adequate blood supply to the parathyroids Proper hemostasis prevented postoperative hemorrhage and made possible a more rapid convalescence a more permanent cure with much less drainage and, as a result, a better scar

Diagnostic Paracentesis in the Acute Abdomen C T Thompson and D R Brown Surgery 35 916-919 (June) 1954 [St. Louis]

Abdominal paracentesis carried out with an ordinary 22 gauge spinal needle or preferably with a Potter needle proved to be an important adjunct in the diagnosis of an acute condition in the abdomen in about 300 patients The site of the puncture was usually about 3 cm superior and medial to the anterior superior iliac spine The needle was directed medially into the peritoneal cavity In blunt injuries of the abdomen primarily including ruptures of the liver and spleen, which are difficult to evaluate paracentesis may present a concrete indication for laparotomy This is particularly important in patients with concomitant head injuries and crushing chest injuries Patients severely ill with an acute abdominal emergency may be spared an unnecessary and even contraindicated laparotomy if the diagnosis of acute pancreatitis or primary peritonitis can be established Evaluation of the peritoneal fluid frequently makes the diagnosis Needle perforations of the intestine are rare and when they do occur, are of no consequence In the 300 punctures reported on, no complications ensued In only one patient who was in stupor caused by a head injury was an unnecessary laparotomy performed Repeated needle aspiration revealed partially clotting blood from the right lower quadrant Subsequent laparotomy revealed three needle holes in a very low right lobe of the liver extending to the iliac crest.

Duodenal Ulcer Complications Controversial Problems in Surgical Management C C Craighead J Louisiana M Soc 106 197-202 (June) 1954 [New Orleans]

Craighead discusses surgical management of complicated duodenal ulcer on the basis of 623 patients admitted to Charity Hospital in New Orleans during the years 1951-1953 One hundred seventy of these had uncomplicated ulcer 33 had penetration 93 obstruction, 229 hemorrhage and 98 perforation Indications for surgery are hemorrhage perforation, and obstruction Penetration into the pancreas is perforation When a patient with ulcer has continuous pain radiating through to the back unrelieved by food and ulcer medication, he has a perforation A person under 20 or over 60 having a complicated ulcer should have an early surgical appraisal Continued severe bleeding is an urgent indication for emergency operation If no point of bleeding is found subtotal gastrectomy is favored Perforation of an ulcer signifies intractability, and resection should be carried out Gastric resection of 70% or more of the organ accompanied by gastrojejunostomy is a more satisfactory procedure for duodenal ulcer than is gastroenterostomy and vagotomy, or resection with gastroduodenostomy or any other procedure now being employed, with the possible exception of combined gastric resection and vagotomy A combination of two procedures that effectively abolishes cephalic and antral phases of secretion has considerable promise The two common aftereffects of gastrectomy are dumping and recurrent ulceration Abnormal shift of potassium and other electrolytes has been noted in the dumping syndrome Gray's hypothesis of an adrenal hormone acting directly on the remaining gastric glands to increase acid secretion may account, at least in part, for gastroduodenal ulcer after gastrectomy Forty (6.4%) of the 623 patients died The mortality rate in 83 patients treated with simple surgical closure of a perforated ulcer was 2.2% The over-all mortality rate in bleeding duodenal ulcer was 9.2% Twenty per cent of those operated on during active hemorrhage died Subtotal gastric resection with gastrojejunostomy, including those who had emergency surgery, carried with it a 5.4% mortality

Follow Up of 95 Ulcer Patients After Gastrectomy with Special Regard to Course of Late Postoperative Complications L K Hansen and N J Thomsen Ugeskr laeger 116 726-730 (May 13) 1954 (In Danish) [Copenhagen, Denmark]

Of the 95 patients with gastric or duodenal ulcer operated on in Herning Hospital from 1939 to 1951 in 74 cases by Billroth 2 in 21 cases by Billroth 1 there were six times as many men as women Most of the patients were engaged in heavy manual labor The indications for operation were chiefly inability to work because of pain and in 35 cases pyloric stenosis Operations for perforating ulcer and bleeding ulcer on vital indication are not included Seven postoperative deaths occurred and one patient operated on again after three years because of peptic ulcer and gastrocolic fistula, died from peritonitis Four patients died from causes not related to their ulcers, and five could not be traced The remaining 78 patients were examined after an observation period of from 2 to 14 years Of the 67 fully able to work 32 tolerated any diet and 35 had mild dyspeptic symptoms An additional patient was well after vagotomy for peptic ulcer in the jejunum Two of the remaining 10 with reduced working capacity showed signs of dumping syndrome The results of control examinations in 54 of the 78 patients, carried out mostly during the first year after operation and information obtained in the follow up in 1953 seem to show that late postoperative complications appeared mainly within the first year after operation

Chylothorax Following a Blow to the Abdomen C Baron and M Reardon J Thoracic Surg 28 11-14 (July) 1954 [St. Louis]

Successful ligation of a ruptured thoracic duct was carried out with complete cure in a boy of 7 who had been punched in the abdomen by a younger boy A search of the literature failed to reveal any other case with the same causal factor It is suggested that the blow may have ruptured the thoracic duct at a congenitally weak or defective area This possibility should be kept in mind when injuries of this type occur, especially in boxing

Pheochromocytoma Clinical Aspects and Surgical Results. W F Kvale, J T Priestley and G M Roth A M A Arch Surg 68 769-778 (June) 1954 [Chicago]

Of 25 patients with pheochromocytoma causing hypertension, the tumors were considered to be functioning paroxysmally in 14, because intermittent attacks of hypertension dominated the clinical picture and the blood pressure was normal or only slightly elevated in the interval between the attacks. The tumors of the remaining 11 patients were considered to be functioning continuously because the hypertension and symptoms were persistent. Multiple tumors were commoner in patients with sustained hypertension than in those with paroxysmal hypertension. A total of 18 tumors were removed from 9 of the 11 patients with sustained hypertension, and 16 tumors were removed from the 14 patients with paroxysmal hypertension. The tumors of two of the patients with sustained hypertension were not removed. Of the 34 tumors that were removed, 23 arose from the right adrenal gland, 9 from the left adrenal gland, and one was extra-adrenal in origin. All 14 patients with paroxysmal hypertension were relieved of their paroxysmal attacks after operation, and none of those followed adequately had a recurrence of attacks. Of the 11 patients with sustained hypertension, 4 had malignant pheochromocytoma with local invasion or distant metastases or both, 3 patients died, but one is still living. Of the remaining seven patients, three had sustained hypertension group 4, of the three, one died as a result of metastases, the hypertension of another reverted to group 1 six years after the operation, and the third patient had nearly normal blood pressure and normal vision. Of the four patients with hypertension group 3, one had hypertension group 2 on follow-up, one had an essentially normal fundus three years after the operation, one had normal blood pressure one year after the operation but no funduscopic examination was performed, and one stated that his blood pressure is normal. Results after removal of a pheochromocytoma that caused intermittent hypertension were uniformly good. Likewise, results after removal of a benign tumor that caused sustained hypertension were good. If the tumor is malignant, recurrence and metastasis may be responsible for death of the patient, results with regard to hypertension, however, are good. Diagnosis of paroxysmal or of sustained hypertension caused by pheochromocytoma may be difficult to establish. The authors observed that histamine is the most reliable drug for use in diagnosing pheochromocytoma that causes paroxysmal hypertension, and phentolamine (Regitine) hydrochloride and piperoxan hydrochloride are the most valuable drugs for use in diagnosing pheochromocytoma that causes sustained hypertension. Careful and repeated observations of the blood pressure in the course of surgical intervention for pheochromocytoma are essential, and appropriate depressor and pressor drugs should be available for prompt administration during operation. Hypotension commonly follows removal of a pheochromocytoma and requires treatment with pressor agents.

NEUROLOGY & PSYCHIATRY

Chromosomal Sex in Transvestites M L Barr and G E Hobbs Lancet 1 1109-1110 (May 29) 1954 [London, England]

It has been demonstrated that the nuclei of females contain a special mass of chromatin, the sex chromatin, which is rarely seen in nuclei of males. For reasons that are not entirely clear, although the small size of the Y chromosome may be partly responsible, the XY sex-chromosome complex of male nuclei does not produce a mass of sex chromatin of comparable size. Moore and associates in 1953 showed that human epidermal nuclei are quite suitable for this investigation. Most students of sexual deviation feel that transvestites differ from homosexuals and from the fetishists in that the desire to appear in clothes, which are contrary to the somatic sexual development, is the primary manifestation of the transvestite, whereas in homosexuals and fetishists other factors are primary. The male transvestite feels that he is a woman who has, through some fundamental error in development, acquired the anatomical features of a man. Skin biopsy specimens were studied in five cases of male transvestism. In each case the epidermal nuclei had a typical male morphology, whence it is inferred that these five

patients bear the male XY sex-chromosome complex. Though it is now reasonably certain that male transvestites have XY sex chromosomes, this by no means rules out the possibility that the abnormality may have a genetical basis, since the ability to detect alterations at the gene level lies far beyond our relatively crude method of studying intermitotic nuclei.

Is Completely Horizontal Position Necessary After Lumbar Puncture? A Berjaal and T B Kraft Nederl Tijdschr geneesk 98 1493-1494 (May 29) 1954 (In Dutch) [Amsterdam, Netherlands]

Most hospitals enforce a strictly horizontal dorsal posture for at least 24 hours after spinal (lumbar) puncture. This is done in the belief that it will avoid complaints. Many patients, however, do not like this prolonged horizontal position, and the rule stresses the widely accepted belief that lumbar puncture is a serious intervention. In order to be able to judge the advisability of this measure, Verjaal and Kraft kept alternate patients of a consecutive group of 200 patients who were undergoing lumbar puncture lying flat on their back for 24 hours after puncture. The other patients were permitted to move freely in their beds and use a pillow. The two groups of 100 each were otherwise comparable. The number of patients with complaints after puncture was the same in each group. As a result of this investigation, the authors were not convinced of the efficacy of making patients lie down flat for 24 hours after puncture.

The Place and Scope of Procaine Injection in the Prefrontal Brain R Soupault Presse med 62 828-829 (May 29) 1954 (In French) [Paris, France]

Prefrontal block by procaine injection has proved as effective as lobotomy in relieving intractable pain in incurable cancer patients, and, in contrast to lobotomy, the procedure does not have serious harmful consequences, particularly mental deterioration. Since the infiltration with procaine can be strictly localized, it is far superior to "blind" section. Some recent fashionable theories (American psychosomatic doctrine, Soviet "nervism" based on Pavlov's work, the corticovisceral theory, etc.) suggest that the evolution of a large number of morbid processes is dominated by the internal organs and the cerebral cortex functioning as a unit, the "visceral brain." The paths of these actions are fairly well known and can be accurately reached by procaine infiltration. Thus it is possible for the procaine block to intervene in some of these visceral pathological processes, particularly in those in which vasomotility plays a part. The interest of these new concepts is enhanced by the results of preliminary trials of the method in a few well-selected cases. The authors list some of their results recently reported elsewhere: immediate arrest of intestinal hemorrhages caused by sigmoiditis, amelioration of local signs of chronic progressive arthritis, and sedation of pain (follow-up one and a half years), suppression for eight months of intestinal hemorrhages in a case of severe progressive hemorrhagic rectocolitis, immediate clinical and verified radiological cure of a giant ulcer of the small gastric curvature accompanied by violent pain and severe hemorrhage (follow-up 10 months), and immediate arrest of severe hemorrhages in a patient with a duodenal ulcer.

Carbon Dioxide Content of Alveolar Air in Poliomyelitis with Respiratory Paralysis G Mjörner Nord med 51 675-679 (May 13) 1954 (In Swedish) [Stockholm, Sweden]

The aim in the treatment of poliomyelitis with respiratory paralysis is to provide ventilation of such amount and composition that the oxygen and carbon dioxide tension in the arterial blood is kept within normal limits. As the usual clinical observation gives only incomplete information as to the state of ventilation, for rational care of respirator patients an objective registration of the blood gases is required. Because of the rapid diffusion of carbon dioxide through the alveolar membrane, the carbon dioxide tension is virtually the same in the alveolar air and the capillary blood in the lungs. In the Epidemic Hospital in Malmö the ventilation in respiratory paralysis was checked by determination of the carbon dioxide content of the alveolar air by means of an analyzer (the Lison-Becker gas analyzer) that allows registration of the carbon dioxide content through

out the respiratory cycle. If in spite of normal elimination of carbon dioxide signs of oxygen deficiency appear, as in atelectasis, part of the air is replaced by oxygen, without change in the total amount of gas insufflated. If the patient's condition is aggravated, analysis of the alveolar air shows whether the deterioration depends on insufficient ventilation with carbon dioxide accumulation or on other factors. When the patient begins to breathe without a respirator, determination of the carbon dioxide content measures the effectivity of spontaneous respiration and indicates whether the patient can get along without a respirator. Enough trained personnel and access to efficient respirators for pressure respiration are needed for the treatment of respiratory paralysis. Seven poliomyelitis patients with respiratory paralysis treated in the fall of 1953 were followed by carbon dioxide analyses. Of the six treated with pressure respiration after tracheotomy two died, the others had decannulation and had good respiratory function.

Dehydration and Acute Delirium J. Delay, P. Deniker and J. Fourment. *Presse méd* 62:827-828 (May 29) 1954 (In French) [Paris, France]

Acute psychoses are often accompanied by isolated cellular dehydration, in which case there is acute delirium, or by a state of generalized dehydration that gives rise to a syndrome called acute psychotic hyperazotemic encephalitis. Certain symptoms—confusion, fever, sitophobia, and hyperazotemia—can be induced or aggravated by dehydration. The primary phenomenon appears to be a disorder in water metabolism. The authors urge that massive rehydration be added to the habitual treatment of acute psychosis.

GYNECOLOGY & OBSTETRICS

Incidence and Question of Hormonal Etiology of Cancer of the Breast Statistical Study H.-J. Maurer. *Arztl. Wchnschr.* 9:462-465 (May 14) 1954 (In German) [Berlin, Germany]

Maurer points out that opinions about the causative role of estrogens in cancer of the breast have been contradictory. Whereas some, largely on the basis of animal experiments carried out by Murray, Lacassagne, Nelson, Lipschütz and others, assumed that estrogens had carcinogenic effects on the breast, studies by Kaufmann and associates as well as by Butenandt indicated that estrogens exert only a 'conditional' carcinogenic effect, that is, they alone are not sufficient but other factors such as heredity and the milk factor must be added. Maurer, on the basis of statistical evaluations, came to the conclusion that too much reliance has been placed on animal experiment and too little attention has been given to the statistical evaluation of clinical material. He feels that the female organism has an adequate counter regulation for excessive estrogen formation during menstruation and pregnancy. Statistical studies convinced him that the incidence of breast cancer increases progressively to the ninth decade, it is more frequent at the higher ages. If it takes about 10 years for a cancer of the breast to develop, anaplasia begins in the majority of breast carcinomas after the menopause. Upward movement of the peak of incidence toward higher age groups has been demonstrated in recent times not only on the basis of clinical material but also of the mortality within large population groups. The rate of breast cancer in women without children or with only one or two children is noticeably above that in women who have more than two children. The concurrence of cancer of the breast with pregnancy or lactation is extremely rare (0.68%). The supposed greater seriousness of the prognosis of breast cancer in pregnant women could not be statistically verified. Pregnancies that begin more than three years after completion of treatment for a breast cancer exert no influence on the further course of the breast cancer.

Some Observations in the Field of Exfoliative Cytology E. von Haam. *Am. J. Clin. Path.* 24:652-662 (June) 1954 [Baltimore]

The observations reported by von Haam were made on over 12,000 vaginal smears examined between 1946 and 1953. The increasing accuracy of diagnosis is demonstrated in a table which compares the percentages of errors as well as of correct diagnoses for four successive two-year periods. Correct diagnoses

increased from 77% in the years 1946 to 1947 to 89.4% in 1952 to 1953, false negative results decreased from 9.5 to 2.7%. With regard to the recognition of cytological patterns in which malignant cells are frequently found the author says that malignant cells usually appear in smears that carry certain characteristics recognizable under low magnification. The most important ones are acidophilic basal cells and basophilic squamous cells with large nuclei. On the basis of animal experiments and some clinical evidence, the author believes that atypical nonmalignant cells can be distinguished from atypical malignant cells. Nuclear hyperchromatism and the presence of a macronucleolus are the most reliable signs for malignancy. Comparison between the cytological response and the clinical results in patients with carcinoma of the cervix treated by various types of irradiation showed that a fair correlation existed only in the group treated by interstitial irradiation. The follow-up of three patients with untreated carcinoma in situ of the cervix over a period of two to six years revealed a periodic reappearance of atypical and malignant looking cells in the vaginal smears. This observation suggests that this lesion can either be reversible or remain in an arrested stage for some time.

Psychoprophylaxis of Pain in Childbirth J. Ravina, P. Devraigne, S. Tsouladze and J. Coenca. *Semaine hop. Paris* 30:2202-2210 (May 30) 1954 (In French) [Paris, France]

Psychoprophylaxis of pain in childbirth rests on the systematic utilization and management of the processes of cortical inhibition and excitation. The desired cortical inhibition and excitation are established and reinforced by preparatory instruction consisting of six weekly lessons beginning in the seventh month of pregnancy and a series of exercises to be practiced by the patient at home. The success of the preparation depends largely on the confidence established between the patient and the physician at the first lesson. The Soviet obstetricians who have been active in this field insist on the genuine physiological importance of the material surroundings in which the instruction is given; they believe that the conditions should contribute to "maximal limitation of external excitants" and should act on the cortex of the pupils, and for this purpose they advocate 'special rooms' comfortable furniture, observance of discipline, cessation of conversation, restriction of movements, and an atmosphere of calm. The fact that women who have received psychoprophylactic preparation of this kind for childbirth are free from anxiety and fear and are relaxed, docile, and happy in itself justifies the use of this method, but it must be remembered that it can be fully effective only if obstetric hindrances to parturition are adequately dealt with and if the patient has the assurance that analgesia and appropriate obstetric treatment will be applied promptly in case they become necessary. The nervous constitution of the parturient also has much to do with the effectiveness of psychoprophylaxis, because, though all human beings are susceptible to the suggestive power of words, not all can respond to it with the same energy or the same result. The best results are obtained among women of a strong type, and these are the very ones in whom childbirth, even without preparation, is often painless. The authors were hampered in their use of this method by certain material disadvantages; nevertheless they obtained positive results in 22 out of a total of 30 women. Suppression of pain was complete in 10 of the 22, and substantial in the other 12.

PEDIATRICS

Corticotropin in Lipoid Nephrosis. C. Hooft and R. Clara. *Nederl. tijdschr. geneesk.* 98:1213-1227 (May 1) 1954 (In Dutch) [Amsterdam, Netherlands]

Five children with lipoid nephrosis were treated with corticotropin. The classical dosage of 50 to 100 mg per day for from five to eight days was employed in four of these. Diuresis increased considerably in all of the children and three patients clinically showed improvement over a considerable period. Two children were treated with small doses (10 mg per day) for from one to two months. These small doses, although producing no increase in diuresis, improved the general condition. Under the influence of the classical dosage proteinuria decreased greatly.

in one patient and slightly in three others. The cholesterol content of the serum decreased considerably in four children receiving the short course of corticotropin therapy. Temporary improvement in the serum protein spectrum was observed in one of the patients, and in another patient deterioration of the serum proteins took place during treatment with cortisone. The other children showed no change in the serum proteins during corticotropin therapy. Thus corticotropin therapy does not normalize total protein and the protein fractions to the same extent as is observed during intercurrent infectious diseases, particularly measles. However, in young patients, with good renal function the stimulation of the protein metabolism may lead to recovery. In patients with lipoid nephrosis who do not as yet have signs of increasing renal insufficiency, corticotropin may prove a valuable aid for several reasons. The permeability of the glomeruli for water increases greatly. The improvement in the general condition improves the appetite. Corticotropin may be lifesaving in patients with severe edema. Of the 27 patients with lipoid nephrosis treated by the authors since 1949 7 died and 16 recovered, the other four still show signs of active lipoid nephrosis. Renal insufficiency was the cause of death in only three of the seven who died. The other four died of hydrothorax, pericardial effusion, cachexia, or generalized edema. The authors feel that these last four might have been kept alive with corticotropin.

Case Report of Boric Acid Poisoning from Topical Application
W T Maxson J Kentucky M A 52 423-424 (June) 1954
[Bowling Green, Ky.]

A 17-day-old infant was brought to the hospital because of a rash and vomiting. As the baby was deep crimson from feet to scalp, the mother was asked if she had used any boric acid on the baby. She gave the following history: four days before admission the baby began to have loose stools, and his buttocks became chafed. For two days she powdered his perineal region with boric acid powder, and on the third day she substituted boric acid solution for the powder. On the day of admission she noticed that the skin over his entire body was quite red, and a large blister appeared on his neck. He had fever and vomited several times. There was considerable excoriation in the perineal region with a raw, weeping surface. The baby was moderately dehydrated and was given fluids, parenterally, and penicillin as a prophylaxis for secondary infection. He continued to vomit and retained nothing given orally. In the course of some 12 hours the brilliant crimson of his skin began to fade, and many large bullae formed. The slightest pressure on the skin caused the epidermis to slough off. His course was steadily downward, and, when he died on the third hospital day, about half of his epidermis had sloughed off. At necropsy boric acid was demonstrated in the liver tissue. Boric acid poisoning can occur from ingestion, from irrigation of body cavities, and from intravenous infusions. There have been numerous reports of fatal poisoning from application of boric acid powder, ointment, or solution to the skin. Although the drug is not absorbed from the intact skin, it is readily absorbed from any area of broken or eroded skin. The commonest symptoms of poisoning in infants are vomiting, diarrhea, convulsions, coma, and an erythematous rash. This erythema may be so intense as to make the infant have the appearance of a "boiled lobster." It is suggested that a warning label be put on all preparations that contain boric acid, such as dusting powder and ointments.

High Oxygen and Hyaline-Like Membranes P D Bruns and L V Shields Am J Obst & Gynec 67 1224-1236 (June) 1954
[St. Louis]

Hyaline membranes were produced in 75% of guinea pigs by exposure to 98% oxygen at sea level pressure from 40 to 100 hours. Experimental animals with oxygen-produced hyaline membranes that survived showed no evidence of residual lung damage five weeks after exposure. Specific and nonspecific staining reactions were similar in naturally occurring and experimentally produced hyaline membranes, this suggests a similar composition for all pulmonary hyaline membranes without implying the same etiology of all types. From histological comparison, pulmonary hyaline membranes in experimental animals and those in the newborn seem to be the result of injury to the alveolar duct and terminal bronchiolar structures. Atelectasis

and intracranial hemorrhage are frequently associated with hyaline membrane disease in infants but were not found in animals killed by exposure to high oxygen concentrations. Aerosols of Alevaire (a nontoxic proprietary detergent) and alcohol behaved in a relatively nontoxic fashion and were accompanied by little hyaline membrane formation in experimental animals. Animals given large doses of steroid hormones died rapidly in high oxygen with a fulminating type of pulmonary vascular injury, the possible significance of this finding is discussed. Although high concentrations of oxygen (over 70% at sea level pressure) given continuously and for prolonged periods to animals or human beings are injurious to pulmonary epithelium, certainly they are not the sole cause of hyaline membrane disease in the premature infant. However, high oxygen (over 70%) can be an aggravating factor that may enhance pulmonary damage to the premature infant.

DERMATOLOGY

The Care of the Common Mole D Chapman and C T Klopp
M Ann District of Columbia 23 308-312 (June) 1954 [Washington, D C]

Chapman and Klopp reviewed case records and found that neither the average physician nor the specialist always recognizes the beginning of a melanoma. The average physician may not be able to distinguish between a malignant melanoma and a benign nevus by physical examination. A specialist may not recognize a melanoma even if it is large. The authors consider as a mole, a pigmented skin lesion that is not obviously a freckle, a hemangioma, an angioma, a patch of vitiligo, or a seborrheic keratosis and therefore cannot be accurately diagnosed by clinical examination alone. They regard the following as indications for surgical excision: 1 Any mole that bleeds or discharges should be excised. 2 Any mole that is sufficiently frequently irritated to come to the attention of the patient should be excised. 3 Any mole that the patient feels has been enlarging should be excised, including moles that appear de novo in an adult. Most moles change size so slowly that such change is not apparent to the person or his close associates but may be noted only by someone who has not seen him for a long time. On the other hand, many melanomas have been removed because the patient noted a change in size before excision. There are specific exceptions to this. During pregnancy many or perhaps most moles enlarge somewhat and become more deeply pigmented. Hence, if a patient is pregnant, excision surgery must include only those moles that the physician thinks are enlarging more than is anticipated as a result of the pregnancy. 4 Any mole that the patient thinks is becoming more deeply pigmented should be excised. 5 A black or blue mole should be excised. Since most nevi are brown, excision of all black or blue lesions is not a formidable task. 6 A mole on the palms of the hands, soles of the feet, genitalia, the oral mucous membrane, or under the nails should be excised, because benign lesions in these areas are relatively infrequent. The authors emphasize that pigmented skin lesions should be surgically excised and not destroyed, since only thus can an accurate diagnosis be made. They feel that skin incisions should be placed about 0.5 cm from the borders of the lesion, and those proved to be malignant can then be reexcised very widely with or without a concomitant regional lymph node dissection.

Contribution to Etiology of Acne Vulgaris J Meyer-Rohn
Arch Dermat u Syph 197 542-556 (No 6) 1954 (In German)
[Berlin, Germany]

The contents of pustules from 120 patients with acne vulgaris were examined microscopically and on culture. Cultures were made from squeeze-preparations of persons with normal skin and with cutaneous diseases. Comedones were examined microscopically and on culture. Extracts were prepared from positive cultures of *Corynebacteria*, and intracutaneous injections of these extracts were given to a large number of probands. An antigen was prepared and an attempt was made to elucidate the serologic conditions. The types of the bacteria were determined, and the conditions of their sensitivity to various antibiotics were analyzed. Gram-positive rods that could be defi-

nately identified as *Corynebacterium acnes* were found almost regularly in acne efflorescences and comedones. Despite these findings, the author first assumed that acne vulgaris is primary and that colonies of *C. acnes* occur only secondarily in pustules and comedones. This concept was based on the following facts: 1. Determinations of resistance showed satisfactory to very satisfactory sensitivity of *C. acnes* to penicillin, streptomycin, chlorotetracycline (Aureomycin), chloramphenicol (Chloromycetin), pikromycin, oxytetracycline (Terramycin). In contrast to that, antibiotic therapy failed except for protracted administration of oxytetracycline. This might be explained by the fact that the antibiotics cannot reach the acne foci since the *Corynebacteria* have settled down within the sebaceous gland. 2. *C. acnes* grows preferably in fatty acids, optimal mediums of this type are present in the acne pustules, comedones, and even in atheromas. 3. The almost regularly positive finding of *C. acnes* in comedones is somewhat in disfavor of a causative part played by these micro-organisms, not nearly every carrier of comedones turns into a patient with acne. In contrast to these findings, the serologic results were notable in that the serums of patients with acne showed a strongly positive complement fixation reaction to the extracts prepared from pure cultures of *C. acnes* while the serums of persons with normal skin showed a negative reaction to the same extracts. Further serologic examinations and animal experiments are required to elucidate the questionable causative nature of *C. acnes* in acne.

Occurrence and Control of Ringworm of the Scalp in the United States W A Casper and J Malone. New York J Med 54 1645-1651 (June 1) 1954 [New York]

According to Casper and Malone, ringworm of the scalp due to *Microsporum audouinii* is not so prevalent now as it was during the epidemic of the middle and late 1940's. A survey of its incidence is presented with data concerning present methods of control throughout the United States. Recommendations are made for more uniform and practical methods of control. The authors point out that excluding children from school has a harmful effect on them and their education. It also throws unnecessary financial and administrative burdens on the school authorities without achieving control. Children who are excluded from school may not continue to receive adequate treatment but will still play with other children both within and without their own family groups. If infected children are permitted to attend school, treatment can be supervised and maintained. Also the education of the children and of their parents in the cause and treatment of the disease can be instituted. The suggestions for control measures include necessity of reporting all cases, inspection by means of Wood's light of exposed children, obligatory treatment of infected children, consideration of the carrier problem. There is no specific treatment for ringworm of the scalp due to *M. audouinii*. The authors review their own experience in the treatment of a severe outbreak of ringworm among the children at the pediatric division of Seaview Hospital, Staten Island. The total number of patients was 40, all boys. The causative organism was *M. audouinii*. Throughout the duration of treatment all children were kept in a special tinea capitis ward. The hair was clipped weekly, and heads were washed daily. White linen caps were worn continuously day and night. The drugs used were Decupryl liquid, Furaspor cream, and Asterol tincture. Decupryl liquid is a solution of copper undecylenate, undecylenic acid with a wetting agent, aerosol, in a solvent liquid base containing isopropyl alcohol and tetrachloroethylene. Furaspor is a cream base containing 1% of nitrofurfuryl methyl ether. Asterol Tincture is a 5% solution of the hydrochloride of 2-dimethylamino-6-(beta-diethylamino ethoxy) benzothiazole in 70% isopropyl alcohol. Treatment was started with Decupryl in 19 and with Furaspor in 18 children. Wood's light readings were taken weekly in the morning after scalp cleansing prior to the morning application of the drug. Asterol was used in 12 patients including some of those not showing response to Furaspor. The liquid preparations seem to be more effective than the one with cream base, Decupryl more than Asterol. There were no side-effects from Asterol.

Analgesic Effects of Cortisone and Hydrocortisone F B Benjamin and T Cornbleet. A M A Arch Dermat. & Syph 69:688-693 (June) 1954 [Chicago]

In a previous investigation on the local effect of intracutaneously injected cortisone Benjamin and Cornbleet found that cortisone exhibited some local anesthetic action. Goldman, Emura, and Baskett believe that the anti-inflammatory effects of cortisone may be due to hydrocortisone as a peripheral cortisone metabolite. In the studies reviewed here the local effects of cortisone and hydrocortisone were compared with those of their suspension medium, of antihistaminics and of procaine (Novocain) hydrochloride as to their (1) immediate analgesic properties, (2) later analgesic properties, and (3) the immediate inhibition of skin flare. The immediate analgesic effect of the hormones was more pronounced than that of any other substance tested, and no significant differences in effect were found between the two hormones. Tested for their later analgesic properties, cortisone and hydrocortisone showed some analgesic properties, but they proved inferior to procaine hydrochloride and concentrated chlorpropenpyridamine (Chlor-Trimeton). In the immediate inhibition of skin flare the antihistaminics show as much effect as the two hormones, while procaine hydrochloride has no immediate effect. These findings indicate that the mechanism of the analgesic action of the adrenocortical hormones studied is different from that of the antihistaminics and of the local anesthetics. The fact that the hormones exert their analgesic action quickly at a time when procaine hydrochloride has had as yet no time to act indicates that the hormones act at an early stage. The inhibition of immediate pain appears to be different in nature from the inhibition of later pain and the inhibition of skin flare.

UROLOGY

Essential Renal Hematuria H E MacMahon and R Latorraca. J Urol 71 667-676 (June) 1954 [Baltimore]

Unilateral nephrectomy was performed on two men aged 56 and 24 years respectively, and on a 56-year-old woman with so-called essential hematuria, i. e., severe, recurrent unilateral bleeding from the kidney in the absence of either an obvious source or a mechanism of hemorrhage. In all three patients, microscopic examination of the removed kidney revealed a single lesion manifesting itself as a direct channel of communication between the pericalyceal venous plexus and the lumen of the calyx. Emphasis is placed on the important role of the venous plexus in severe bleeding from the kidney not only in cases of "essential hematuria" but also in the presence of other lesions observed within the kidney. A review of the literature suggested that a more careful search in the area comprising the minor calyces, in the region of the fornices and adjacent areolar tissues may reveal the source of bleeding far more often than it is generally found. Particular emphasis also is placed on the so-called angiomatous and telangiectatic vascular lesions of the kidney. Concerning the problem of therapy the authors advocate assuming a more realistic attitude by considering the most probable type of lesion that may be found and giving more attention to the repair or removal of this lesion in an effort to save the entire organ.

The Cryptorchid Problem J S Grove. J Urol 71 735-741 (June) 1954 [Baltimore]

Among the 168,058 patients admitted to the Michael Reese Hospital of Chicago between 1943 and 1951 there were 101 (0.06%) with cryptorchism. The percentage of patients with ectopia of the testis would be much greater than 0.06% if the statistics were only on male patients and also did not include readmissions. Likewise the number of patients with cryptorchism would be much more than 101 if all patients with this condition had been included and not only those who entered the hospital for surgical treatment of ectopia. A study of malignant testicular tumors made at Michael Reese Hospital between 1921 and 1951 revealed 55 cases of tumors in scrotal testes, and 2 cases in ectopic testes (a ratio of 3.6%). One of these ectopic cases occurred in an abdominal testis, and the other in an

inguinal testis that recently had been brought down successfully into the scrotum. This incidence is certainly under the figure of 10 to 15% of malignancy in undescended testes that was given in many reports. The author believes that the fear of malignancy in a cryptorchid testis is not a reason for surgical intervention, i. e., orchiectomy. Microscopic changes occurring in ectopic testes after the age of six years demonstrate a sharp decrease in germinal elements in contrast to normally placed testes. Because of this early atrophy, surgery should be performed before the age of six years. The use of hormone therapy in the cryptorchid patient is questionable because if one testis is in the scrotum it signifies that enough hormonal stimulation for descent is present. The reason for nondescent in the other then must be due to adhesions or a narrow inguinal canal or some constitutional defect of the testis. In older persons surgery may be performed for an associated symptomatic hernia or for cosmetic reasons. The possibility of future malignancy should not be a reason for surgical intervention. Undescended testes that cannot be brought down satisfactorily at the time of surgery should not be subjected to multiple operations. They should be let alone if they are in the groin and, if they are in the abdomen, they should be removed. The rationale for orchiopexy must rest on the placement of the testis where it can be observed closely. Contacts with these patients should be kept for many years. This will give some suggestions as to the changes that occur in these organs, particularly with regard to the questions of atrophy and malignancy. In view of the long interval, up to 20 years, before malignant changes took place in testes successfully placed in the scrotum (two such cases are reported in detail), the author does not believe that the ectopia should be blamed for this tumor formation. These tumors should be simply classified as tumors of a scrotal testis.

Cancer of Prostate J Picatoste y Picatoste. *Cir. ginec. y Urol* 7:47-58 (Jan.) 1954 (In Spanish) [Madrid, Spain]

Cancer of the prostate is highly metastasizing. Bone metastases are most frequent in the pelvic girdle and in the lumbar vertebrae. These metastases are very painful. Pain, either unilateral or bilateral, is located mainly in the lumbosacral and sacrococcygeal regions and may radiate to the gluteal region, the thigh, and the leg. Pain becomes unbearable as the metastases grow. The patients become invalids from fear of eliciting pain through postural changes or by walking. The urinary symptoms appear late. A presumptive diagnosis is suggested in the presence of bilateral sciatic pain. The roentgenograms of the bones confirm the diagnosis. The changes in the bones with cancer metastases of the prostate consist of rarefaction and condensation either in alternation or in juxtaposition, giving the bones an aspect similar to that observed in Paget's disease. The changes in the bones and in the vertebrae vary with the stage of metastasis, from the simple aspect to deformation of the bones and appearance of ivory vertebrae, to complete skeletization of the bones and vertebrae. In rare cases a great number of vertebrae or all of them, as well as the pelvis and the head of the femur, are involved by metastases. The contours of the vertebrae and of the sacrum are almost invisible in the roentgenograms. The treatment consists in administration of estrogen compounds, which gave satisfactory results in 75% of the patients observed by the author. The general condition and appetite of the patients improved, metastatic pain greatly diminished or disappeared, and the metastases regressed. Regression of metastases was proved by roentgen examination or by palpation of palpable metastases in structures other than the bones. The good results observed by the author lasted between two and one-half and four and one-half years. One of the patients had two long periods of improvement: one for three years after administration of estrogen compounds for one year and the second of more than one year. The patient is still in a state of improvement after administration of estrogen compounds for seven months. Cancer of the prostate rarely gives metastases to structures other than bones. The author reports five cases, one each of metastatic inguinal adenopathy, metastases in the face over the region of the ascending branch of the lower maxilla, the palm of the hand, the bronchi, the lung, and the liver. The results of treatment with estrogen compounds in this series of patients were comparable to those obtained in patients with bone metastases,

except in two patients who were observed for the first time in an advanced period of cancer of prostate, one with acute retention of the urine and one in a condition of advanced cachexia.

Carcinoma of the Prostate K E Van Buskirk and J C Kim. *J Urol* 71:742-747 (June) 1954 [Baltimore]

Of 841 men with disease of the prostate admitted to Walter Reed Army Hospital between 1940 and 1952, 705 were treated for benign prostatic hypertrophy and 136 with an average age of 65.8 years for carcinoma of the prostate. Radical perineal prostatectomy, i. e., removal of the prostate and capsule and seminal vesicles, was done in 74 (54.5%) of the 136 patients. This high percentage of radical procedures was attained because of the requirements of the annual physical examination of military personnel, which includes a digital rectal examination. The tissue removed by excision was microscopically studied and if the results of the study indicated that the entire malignant area had been removed, no further treatment was given. Orchiectomy and estrogen therapy was instituted without delay in patients in whom the tissues beyond the capsule were involved. Postoperative follow-up, x-rays, and acid phosphatase determinations were done at three month intervals during the first year, at six month intervals the second year, and annually thereafter. In 62 (45.5%) of the 136 patients, palliative treatment consisting of estrogen therapy, orchiectomy, transurethral resection, suprapubic cystostomy, roentgen irradiation, prefrontal lobotomy, and adrenal ectomy, was the only treatment possible because of metastases or evidence of local extension beyond the limits of surgical excision. Of 30 patients who received palliative treatment, 8 (26%) survived for more than five years, 20 (67%) died, and 2 were lost to observation. Of 22 patients subjected to radical perineal prostatectomy, 11 (50%) survived for more than five years, 7 died (31%) and 4 were lost to observation. The increased survival rate of patients subjected to radical perineal prostatectomy over those subjected to conservative procedure is evident. Most of the 20 deaths in the group with palliative treatment resulted from carcinoma of the prostate. Of the seven deaths in the group with radical treatment, 4 resulted from carcinoma of the prostate, 2, 23, 26, and 30 months, respectively, after the operation. The remaining three patients died of other causes. All men over 40 years of age should have an annual digital rectal examination to detect early evidence of cancer of the prostate. Suspicious glands should be examined more frequently for evidence of change.

OTOLARYNGOLOGY

New Treatment of Chronic Secretory Otitis Media, B W Armstrong. *A M A Arch Otolaryng* 59:653-654 (June) 1954 [Chicago]

Armstrong presents a new treatment for chronic secretory otitis media. A small piece of plastic tubing, measuring about 1.5 mm in diameter, is inserted into the middle ear through a conventional myringotomy incision. This provides continuous ventilation of the middle ear and allows the lining membrane to return to normal. It also permits drainage of fluid into the external auditory canal and prevents the incision from closing prematurely. The tube may be left in place as long as desired—two to three weeks has been long enough in most cases. The tubing is inert, and no evidence of irritation or unfavorable reaction has been observed. Five patients have been successfully treated by this method. A typical case is reviewed to illustrate the treatment.

Rationale for Velar Closure as Primary Procedure in Repair of Cleft Palate Defects W B Slaughter and S Pruzansky. *Plast. & Reconstruct. Surg.* 13:341-357 (May) 1954 [Baltimore]

Slaughter and Pruzansky feel that closure of the congenital cleft of the palate is not solved by treating the structures as static masses. The tissues involved in the cleft proper, as well as the structures contiguous to the defect, must be considered in terms of time, and of growth, which implies more than an increase in size. The various structures increase in size at different rates, and in this way growth brings about alterations in

proportion as well. Surgery can either aid in directing the natural growth processes into proper channels through establishment of muscle balance across the defect, or it can interfere with the normal developmental changes by hindering growth through interference with blood supply, introduction of scar or destruction of growth centers. The authors present the rationale for closure of defects of the velum as a primary procedure, and its relationship to the closure of the entire cleft of the palate. The surgical principles utilized to effect a closure of the palate are exemplified in four case reports chosen from 200 such cases. When the criteria for closure have been fulfilled early in life, surgery may be attempted even before one year of age. In other instances, it has been found necessary to postpone surgical intervention until growth and development provided more desirable circumstances. The variety of cases presented served to emphasize the authors' inability to prescribe a rigid formula for timing the surgical repair. Some surgeons achieve a percentage of success while following a fixed rule in terms of technique and timing. Yet others, following diametrically opposite schools of thought, have achieved a measure of success in their own way. To establish a middle ground that would allow for flexibility in choice of technique and less rigidity for timing of surgery, requires an understanding of the myodynamics of the defect and of the growth potential of the structures involved. This presentation is an attempt to justify the approach of these authors to the problems attending surgical repair of cleft palate. The results are documented by longitudinal growth studies utilizing cephalometric roentgenography and casts of the palate.

THERAPEUTICS

Vascular Effect of Isoniazid. Clinical Observations. L. Stura and M. Mannari. *Minerva ginec.* 6:207-212 (March 31) 1954 (In Italian) [Turin, Italy]

Stura and Mannari studied 10 patients with tuberculosis of the genital organs in whom hemorrhagic signs of the petechial type appeared during isoniazid therapy. They performed various tests before the drug was administered and each time after a total dose of 1,000 mg. was given (The daily dosage was 200 mg.) With the exception of some mild cases of anemia, which was probably caused by the disease itself rather than the drug, the number, volume, and resistance of the red blood cells and the number of platelets remained unchanged. The prothrombin time was only slightly prolonged. The capillary fragility test revealed alterations in the small vessels. The main change was an increase in the permeability of the capillaries. These alterations were seen after a total dose of from 2,000 to 4,000 mg. was given. The decreased capillary resistance may be the result of a direct or indirect action of the drug. The former would take place through an inhibition of the cellular oxidation processes and would be favored by the existing tuberculous toxemia. The indirect action may be explained in various ways. Products of the bacterial disintegration caused by the drug may enter the circulation. Substances that are the product of the altered hepatic metabolism induced by isoniazid and that have a toxic action on the capillaries may enter the circulation. There may be an isoniazid stimulation of neuroendocrine nature that would be followed by a neurovegetative dystonia that determines vasomotor hyperemia-causing discharges in certain areas. The authors suggest that vitamins C and P be given to patients receiving isoniazid to protect the capillaries. Because the liver may be an important factor in the causation of the decreased capillary resistance that follows isoniazid therapy, this should be supplemented also by a liver protecting therapy.

Symptomatology and Pathogenesis of Intoxication Produced by Oxytetracycline (Terramycin). E. Koch, F. Heiss, H. J. Wachtel and K. Schomper. *Medizinische No.* 21:742-744 (May 22) 1954 (In German) [Stuttgart, Germany]

Single injections of a commercial preparation of oxytetracycline (Terramycin) were given to 160 guinea pigs and 90 rats. Toxic symptoms consisted of pronounced muscle spasms, pulmonary hemorrhages, enterocolitis, and a polyuria with severe mineral loss. In general, guinea pigs were more sensitive to the

toxic effects of the antibiotic than rats. Intracerebral administration of 4 to 8 mg. of oxytetracycline per kilogram of body weight caused severe spasms of equal intensity in both guinea pigs and rats. In guinea pigs the lethal dose was 10 to 12 mg. per kg. of body weight regardless of route of administration. This suggested that the toxic effect of oxytetracycline need not be primarily cerebral, and this was confirmed by the observation that the brain from which the blood had been removed was free of oxytetracycline despite a high oxytetracycline level in the blood and despite administration of the antibiotic into the artery leading to the brain. The presence of an oxytetracycline destroying power in the cerebral tissue could not be demonstrated in the guinea pigs nor in the rats. The authors' studies showed that the muscle spasms were not produced by the oxytetracycline molecule but by the sodium glycinate, which in the commercial preparation had been added to the antibiotic to maintain its solubility. In addition to the pulmonary hemorrhages, a general tendency to hemorrhages was observed in the capillary areas of various organs, the intestines, sex organs, kidneys, brain, and skin. A rapid drop, up to 10%, of the prothrombin level, that could not be replaced by high doses of vitamin K₁ was found, it was caused by an acute insufficiency of the liver particularly with regard to the formation of prothrombin complex. Corresponding microscopic findings consisted of dissolution of the liver cells, vacuolization and cell necrosis. The polyuria occurred after a latent interval of four to six days following a single injection of oxytetracycline. Considerable loss of weight and dehydration resulting in a protoplasmic collapse with drop of temperature, increased hemoconcentration and hypoglycemic spasms were the sequelae of the liver insufficiency and the increased cell necrosis. Of eight patients with cholangitis and cholangitic cirrhosis, respectively, who were given 250 mg. of oxytetracycline intravenously daily, three showed a drop of the prothrombin level, three a rise of the serum urea level, and one a considerable diuresis as signs of oxytetracycline intoxication. After discontinuation of the antibiotic, these disturbances subsided completely within one to three days. Oxytetracycline, like chlortetracycline (*Aureomycin*), should not be given to patients with liver damage.

A Comparison of Cortisone and Aspirin in the Treatment of Early Cases of Rheumatoid Arthritis. A Report by the Joint Committee of the Medical Research Council and Nuffield Foundation on Clinical Trials of Cortisone, A.C.T.H., and Other Therapeutic Measures in Chronic Rheumatic Diseases. *Brit. M. J.* 1:1223-1227 (May 29) 1954 [London, England]

Sixty-one patients in the early stages of rheumatoid arthritis, and regarded as suitable for treatment with either cortisone or aspirin, were allocated at random to treatment with one or the other agent (cortisone, 30 patients, aspirin, 31 patients). These two comparable groups were treated and observed for one year before this first report was made. For most of the year, treatment was individualized by the physician in charge of the patient at a level sufficient to restore maximal functional efficiency without producing serious side-effects. Observations made 1 week, 8 weeks, 13 weeks, and about one year after the start of treatment reveal that the two groups ran a closely parallel course in nearly all the recorded characteristics—joint tenderness, range of movement in the wrist, strength of grip, tests of dexterity of hand and foot, and clinical judgments of the activity of the disease and of the patient's functional capacity. The hemoglobin level and blood sedimentation rate were slightly more favorably influenced by cortisone, but in no other respects did the groups significantly differ. With each form of treatment the disease was judged at the end of one year to be inactive, or only slightly active, in about three-fourths of the patients, and with each treatment some two-fifths of the patients were regarded as capable of normal work and activity. For practical purposes, therefore, there appears to be surprisingly little difference between the two drugs in the management of early cases of rheumatoid arthritis. As this trial continues over a period of two more years, it is hoped that the evolution of the rheumatoid process itself under the influence of prolonged therapy with these different agents can be studied.

Severe Asthma Treated with Corticotropin K Ball *Lancet* 1 1162-1165 (June 5) 1954 [London, England]

Thirteen patients with severe chronic asthma were given either corticotropin or isotonic sodium chloride solution by injection for 12 days. No one in charge of the patients knew which substance was being given. Of the six patients receiving corticotropin five showed moderate or much improvement, compared with 2 out of 7 patients receiving isotonic sodium chloride solution. Much improvement took place in 3 of 7 patients with status asthmaticus treated with corticotropin. Twelve patients with severe asthma were maintained on corticotropin therapy with satisfactory results. Usually their asthma became mild. Death is likely in patients who have repeated attacks of status asthmaticus. Corticotropin (or alternatively cortisone) should be made available in all such cases.

Risk of Thromboembolic Complications from Cortisone Therapy H I Russek, B L Zohman and A S Russek *Am Heart J* 47 653-657 (May) 1954 [St Louis]

A course of cortisone in relatively large doses was given to 76 men and 10 women with serious vascular disease, most of whom were between the ages of 40 and 74, 6 patients had angina pectoris and were given cortisone to determine its influence on coronary reserve. The remaining 80 patients received cortisone for various conditions such as atypical pneumonia unresponsive to antibiotics, refractory shoulder-hand syndrome, acute cerebrovascular accidents and chronic hemiplegia after apoplectic stroke. Most patients were given 200 mg of cortisone orally in divided doses on each of the first two days with progressive diminution to a maintenance dose of 50 mg daily through the third week. Eighteen patients received initial doses of 300 mg daily. Three patients were given maintenance treatment for 4 to 14 weeks. All patients were placed on a low salt diet. No thromboembolic complications were observed in these patients during the course of cortisone treatment and for several weeks after its termination. There was no aggravation of symptoms attributable to cortisone in patients with angina pectoris and the levels of blood pressure in those with hypertensive disease were also uninfluenced by the drug. These results seem to indicate that the theoretical danger of thrombotic complications from the use of cortisone is not clinically significant and that underlying disease of the heart or blood vessels need not preclude such therapy when proper supervision and simple precautions such as encouragement of active and passive motion and frequent change of position in bed are instituted. Administration of cortisone does not constitute a sufficient threat clinically even in patients with serious vascular disease to require anticoagulants prophylactically.

PATHOLOGY

Absence of the Left Pulmonary Artery. A Report of Six Cases with Autopsy Findings in Three J S McKim and F W Wiglesworth *Am Heart J* 47 845-859 (June) 1954 [St Louis]

Necropsies were performed in 210 patients with congenital anomalies of the heart who were operated on and died within a short time after the operation. They revealed absence of the left pulmonary artery in 2 girls and 1 boy, aged 5 years, 26 months, and 20 months, respectively. Of these three patients, two had tetralogy of Fallot and one, Eisenmenger complex. All three had a right aortic arch and a left innominate artery. All three had an obliterated vessel running from the innominate artery to the hilus of the left lung. One patient had a closed right ductus arteriosus, one had no right ductus arteriosus, and one had a probable right ductus arteriosus. In each of the three patients, the main pulmonary artery was continuous with the right pulmonary artery, and there was no trace of a left pulmonary artery. The intrapulmonary distribution of the branches of the anomalous vessel was identical with that of a normal left pulmonary artery. In two patients there was a slight, and in one a pronounced, shift of the mediastinal septum to the left. The right lung was notably more voluminous than the left in one patient. Grossly in all three patients, the left lung had undergone normal development. It was noted that, in one patient, collateral arteries supplied the left lung. In three

living patients, a presumptive diagnosis of absence of the left pulmonary artery was made. Eleven additional cases of absent right or left pulmonary artery were collected from the literature. The following principal anatomic features were observed: 1. Absence of the central or heart end of the left pulmonary artery with persistence of a normal intrapulmonary portion was associated with a variety of cardiac malformations. Both in the authors' cases and in those collected from the literature there was a high incidence of an aortic arch on the side opposite to the absent pulmonary artery. However, at least two of the authors' three living patients showed the arch and the apparently absent artery on the same side. 2. An anomalous obliterated vessel was running from the left innominate artery to the hilus of the left lung, continuous with patent, normally distributed, elastic, intrapulmonary arteries. Evidence was presented to show that the closed part of the vessel is an obliterated, left ductus arteriosus. Almost certainly, the ductus portion may, on occasion, remain patent, as judged from the cases in the literature in which there was an absent right or left pulmonary artery. 3. A normally developed but small left lung was observed, the size of which may be secondary in part to the decreased blood flow. The diagnosis of an absent right or left pulmonary artery may be first suggested by changes noted in the routine plain films of the chest. The hemithorax of the affected side may be seen to be smaller and the ribs more closely spaced, with slight shift of the mediastinal septum. The affected lung may appear undervascularized as compared to the opposite lung. Angiocardiography is the most valuable method of examination, but in one of the necropsy cases this technique failed to demonstrate the abnormality, presumably associated with an adequate collateral circulation. Patency of the unusually situated ductus arteriosus may confuse the issue. Differential oxygen consumption between the two lungs is probably very significant, but the performance of such an estimation is dependent on the age of the patient and availability of the apparatus. The physiological significance of this anomaly is that the patient with one pulmonary artery absent is dependent on one lung for oxygenation, but the anomaly is compatible with life and may be asymptomatic. From a surgical standpoint it would be prudent, when contemplating an aorticopulmonary anastomosis or pulmonary resection, to be reasonably certain that there is a pulmonary artery both on the operative as well as on the nonoperative side.

Complement Fixation Test with a Triple Antigen for Syphilis, Tuberculosis, Leprosy or Chagas' Disease in Blood Banks J Oliveira De Almeida, J Lima Pedreira De Freitas and H Brandão *Am J Trop Med* 3 490-494 (May) 1954 [Baltimore]

Serologic tests are used routinely for excluding syphilitic donors in blood banks. Oliveira De Almeida and associates point out that in South American countries, where leprosy and American trypanosomiasis (Chagas' disease) are endemic and the incidence rates for tuberculosis are high, the serologic examination for syphilis alone is not sufficient. They describe a quantitative complement fixation test using a triple antigen, made up of cardiolipin no. 72 for syphilis, *Trypanosoma cruzi* extract for Chagas' disease, and a tubercle bacillus extract for tuberculosis and leprosy. Experimental work has been done to establish the basic principles governing the reaction by demonstrating that the specific systems react independently of the presence of other antigens. Serums from 786 blood donors were tested against the triple antigen and against each one of the specific antigens, in complement fixation tests. The 599 serums that did not react with the triple antigen did not show any reactivity with the antigens for syphilis, tuberculosis-leprosy, or Chagas' disease, no false negatives occurred with the triple antigen. The 103 serums that reacted with any one of the specific antigens reacted also with the triple antigen. Four serums were anticomplementary, simulating "reaction" with the triple antigen, 76 serums gave "reaction" with the triple antigen but did not show any specific reaction in the tests for syphilis, Chagas' disease, tuberculosis or leprosy. These results could be due to the cumulative anticomplementary effect of these serums plus that of the antigens composing the triple antigen. The authors feel that these results indicate that a screen test with the triple antigen should be used instead of the regular test for syphilis in areas where syphilis, tuberculosis, leprosy, and Chagas' disease are endemic.

BOOK REVIEWS

Seventy Five Years of Medical Progress—1878-1953 Edited and with foreword by Louis H. Bauer M.D. F.A.C.P. Secretary-General The World Medical Association Hempstead N.Y. Contributors Leo H. Bartemeier et al. Cloth \$4 Pp 286. Lea & Febiger 600 S. Washington Sq. Philadelphia 6 1954

During the past three-quarters of a century medical scientists have learned more about the nature and treatment of disease, and about its prevention, than in the previous 3,000 years. Indeed new discoveries, new methods, new drugs, and new treatments now come with such startling rapidity that it is almost impossible for physicians to keep up with them. Therefore most physicians must restrict their interests and studies to their own special fields of medical practice while attempting to obtain only a general idea of the outstanding advances of medicine as a whole. Since this book summarizes both the story of the past 75 years in medicine and the present extent of medical knowledge it is valuable as a compilation of the medically recent past especially when viewed from the vantage point of current specialized practice, as described by specialists themselves. In the field of each medical and surgical specialty, as well as in the field of general practice the material which is presented by nationally recognized authorities provides an excellent clinical summary of many of the best and most advanced techniques. As an informative account of the increasing conquests of mankind in the relentless war against disease this book is highly recommended.

Illustrated Review of Fracture Treatment. By Frederick Lee Liebolt A.B. M.D. Sc.D. Attending Surgeon in Charge of Orthopedics New York Hospital New York. Boards \$4 Pp 229 with 605 illustrations Lange Medical Publications P.O. Box 1215 Los Altos Calif. 1954

This book, written for the medical student resident and general practitioner, is concerned with the diagnosis and treatment of fractures. The author states that it is in no way complete but is merely a supplement for the standard textbooks on this subject. It is a valuable guide for the beginner and might be useful to nurses in the industrial field and to others who cooperate in ancillary services. Many features of this book, such as the brief section on the physiology of healing of fractures and the numerous detailed drawings of fractures and their mechanism, deserve special commendation. Several methods of fracture treatment are discussed and illustrated but, in a book such as this, a complete description of all forms of treatment could not be expected. The chapter on clinical examination includes history and physical and neurological examination, but unfortunately there is no general discussion of the roentgenologic examination. This volume would have been more worth while if it had stressed the importance of obtaining roentgenograms of fractures after reduction, emphasis should also have been placed on obtaining roentgenograms in patients in whom pain and disability persist because frequently occult fractures and calcification in the soft tissues are thus discovered. Because this book is printed by the offset method, many of the roentgenographic reproductions are not of the best quality, but the book is still the best of the primers on fractures.

Energy Metabolism and Nutrition By Professor Raymond W. Swift and Professor Cyrus E. French Department of Animal Nutrition Pennsylvania State University State College. Cloth. \$5.75 Pp 264 with 16 illustrations. Scarecrow Press 3341 Prospect Ave. N.W. Washington 7 D.C. 1954

Sometimes in emphasizing the fact that vitamins, minerals, and specific amino acids are indispensable for normal nutrition the fundamental necessity of the body for energy is overlooked. The caloric has become widely known and used in this country and abroad as a unit for measurement of heat. Either directly or indirectly the heat of the body is derived from the food ingested. In their article "Energy Metabolism" (*Ann. Rev. Physiol.*

5:105 1943), Dr. E. B. Forbes and Dr. LeRoy Voris stated, "In the sense that the most conspicuous attribute of life is motion that motion is an expression of energy and that all nutrients essential to the life of animals, including man, are involved directly or indirectly in energy production, energy metabolism affords a significant point of view—a common denominator—in terms of which all nutrients may be studied and compared."

It is indeed difficult, if not impossible for the average person to remain unaware of calories. On one hand he sees advertisements warning him that his excessive intake of calories will result in obesity, thus shortening his life; on the other hand he is admonished to increase his caloric intake so that he will not be ashamed to be seen on the beach. In addition to its concern with energy metabolism as affected by hormones, drugs and disease, the medical profession has become acutely aware of the major role food plays in the maintenance and restoration of good health.

The authors of this book have brought together the various methods of heat measurement. The limitations and applicability of each in modern nutritional science are pointed out. The first part of the book discusses the underlying principles of calorimetry and includes a brief historical account of the development of techniques in the field. The second part of the book presents the experimental methods and equipment used in direct and indirect calorimetry. Part 3 is a general section on experimentation; it gives typical applications of the principles and procedures discussed in the first two sections. For the benefit of the student and investigator each method of experimentation includes the details of computation. In addition the appendix of the book contains supplemental problems to afford practice in actual computation and to emphasize the principles involved. The average physician will not find any new or startling concepts in this concise book, but it should be invaluable to those interested in the actual determination of the caloric value of foods and in metabolic measurements.

Good General Practice: A Report of a Survey By Stephen Taylor M.D. M.R.C.P. Nuffield Provincial Hospitals Trust. Cloth. \$3.50 12s. 6d. Pp 604 with 56 illustrations. Oxford University Press 114 Fifth Ave. New York 11. Amen House Warwick Sq. London E.C.4 1954

The purpose of the survey discussed in this book was to study the best in general practice in Great Britain to analyze the findings under a number of subject headings (nonstatistical), and to present the results in such a way that the general practitioner or the student intending to become one could learn something of value about the organization and conduct of his practice. The field work of the survey was carried out between February 1951 and September, 1952 and involved 30 practices with 94 physicians. Many of these were small partnerships and a few were groups; only one made up of as many as seven physicians. The book contains much information on the nature of the better general practice in Britain, including accommodations for work, available equipment, laboratory work done and the method used for obtaining time off by the physicians. It is virtually impossible to compare the nature of general practice in Britain with that in our own country since the traditions and facilities are in many respects quite different and the impact of the British National Health Service has no counterpart in the United States. It is apparent from this book, however, that most general practitioners in Britain have more paper work than we do; that there are good and poor physicians among them; that equipment and facilities are on the whole of poorer quality than in the United States; and that many general practitioners have to see a number of patients such as most physicians in this country would consider it impossible to treat adequately. To quote "It is nearly 9 o'clock at night and we have been seeing patients since tea time—thirty seven I say, that's excluding the certificates and prescriptions for relatives" and "Slow going—only one every five minutes." This book should largely fulfill the purpose for which it was intended but except for a few passages it will have limited usefulness for medical readers in the United States.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

QUERIES AND MINOR NOTES

HISTAMINE CEPHALALGIA

TO THE EDITOR—*Kindly send me information on histamine cephalalgia (Horton's syndrome)*

Carl Frederick Becker, M D , Lincoln, Ill

TO THE EDITOR—*I have under my care a man in whom I have made the diagnosis of histamine cephalalgia. This has responded very well to a course of diphenhydramine (Benadryl) by mouth, and at present he is asymptomatic. Recently he applied for life insurance and was uprated because of the above diagnosis. What is the ultimate course and prognosis in patients suffering from histamine cephalalgia and also from the commoner migraine? Is there any increased risk in such persons that would justify the increase in premium by a life insurance company?*

M D , Kentucky

ANSWER—Histamine cephalalgia was first fully described with illustrative cases in *THE JOURNAL*, Feb 1, 1941, page 377. It is a unilateral headache with excruciating, boring pain the outstanding symptom. The pain is sudden and severe at the onset. It is of short duration, lasting usually less than an hour, and often subsides abruptly. It involves the region of the orbit and the temple and may extend to the upper jaw, occasionally the lower jaw, and even into the occipital area, neck, and shoulder. It does not follow the anatomic distribution of any of the cranial nerves. Lacrimation, frequently profuse, occurs, and this sign is usually associated with redness and slight edema, rhinorrhea or plugging of the nostril, and dilatation of the vessels in the painful area. Beads of perspiration often are visible on the forehead above the involved eye. There are no trigger zones, and scotomas, nausea, and vomiting are not associated phenomena. Attacks occur once or several times within 24 hours but are more frequent during sleep. The attacks tend to occur in a series and frequently on a seasonal basis. So severe and frequent are the attacks of pain that many patients have contemplated suicide. Histamine cephalalgia occurs chiefly in males. Remissions and exacerbations occur spontaneously. About 40% of patients have undergone unnecessary operations in a vain attempt to obtain relief of their pain. Histamine cephalalgia should not be confused with trifacial neuralgia, "sinus headache," or classic migraine.

Ideally treatment should alleviate the pain of the acute attack and prevent subsequent attacks. The intravenous administration of 1 cc of dihydroergotamine (DHE 45) frequently will abort an acute attack in one to five minutes, if it is given at the onset of the attack. The breathing of 100% oxygen will alleviate mild attacks, if it is used promptly. A rectal suppository that contains 2 mg of ergotamine tartrate and 100 mg of caffeine, if used at bedtime, may prevent nocturnal attacks. Histamine "desensitization," however, is the treatment of choice for preventing future attacks. The schedule for histamine desensitization has to be tailor-made to fit each patient. The procedure seems simple, but it is often fraught with many pitfalls, especially when a patient has been treated more than once. There is apparently no increased risk in patients with histamine cephalalgia or migraine from the standpoint of life expectancy.

CIRCUMCISION

TO THE EDITOR—*Much has been written regarding the advisability of circumcision in the newborn. Should all normal, healthy male infants be circumcised?*

A E Parks, M D , Fordyce, Ark

ANSWER—The question as to whether all normal, healthy male infants should be circumcised has been a moot one throughout all time, and one will find enthusiastic advocates both for

and against this procedure. As a urologist, who sees many patients in later life with various difficulties of the external genitalia, this consultant feels that a properly performed circumcision would be advantageous to all normal, healthy male infants.

CANCER OF THE PROSTATE

TO THE EDITOR—*Will testosterone initiate carcinoma of the prostate? Is it not a fact that after middle age the output of androgen is markedly lessened, and, therefore, the injection of a synthetic androgen would only be a replacement rather than an overstimulation? There is no question that many middle-aged men are markedly helped by injection of an androgen.*

M.D., Washington, D C

ANSWER—Attempts to produce true neoplasms with testosterone in experimental animals and man have been unsuccessful. There is no clinical or experimental evidence that exogenous or endogenous testosterone causes carcinoma of the prostate. The incidence of carcinoma of the prostate in men increases with age, whereas the endogenous production of testosterone and estrogen decreases. In the aging man the shift in the ratio of androgens to estrogens favors the latter, but whether or not this has any significance in prostatic cancer or hypertrophy is speculative. Experimentally, however, large doses of estrogen produce benign adenomatous growths of the prostate that can be inhibited or caused to regress by giving testosterone. The role of the pituitary gonadotropins will be determined when more purified gonadotropins become available. The improvement reported following the use of testosterone in benign prostatic hypertrophy may result from the disappearance of congestion in the prostate and an improvement in bladder function, the latter being secondary to the anabolic effect of testosterone. The administration of testosterone or estrogen will produce no appreciable change in the size of the gland once hypertrophy has occurred. Although the cause of benign prostatic hypertrophy is unknown, the presence of a functioning testis is necessary for its development, as no cases have been reported in eunuchs, however, castration has no effect on established benign prostatic hypertrophy.

TOMATO JUICE AND KIDNEY STONES

TO THE EDITOR—*An elderly patient with renal calculi, unable to take citrus fruit, drinks a pint of tomato juice daily. Would that be contraindicated on the supposition that the stones may be oxalates? Would the habitual use of calcium carbonate as a gastric alkalinizer have any effect on the formation of renal calculi?*

M.D., West Virginia

This inquiry was referred to two consultants, whose respective replies follow—ED

ANSWER—Elderly patients with renal calculi often do not follow dietary instructions well. If this patient is unable to take citrus fruits, certainly tomato juice daily in the amounts mentioned should be discontinued, because tomatoes are high in oxalates. Grape juice may be substituted, as it is not high in oxalates. One must remember too that some of the oxalates in the urine may be endogenous. The habitual use of calcium carbonate, if it renders the urine continuously alkaline, may favor the formation of renal calculi. The incidence of renal calculi is not definitely increased in patients on a type of Sippy diet, because apparently the milk and cream keep the urine acidified.

ANSWER—The elderly patient with renal calculus should not drink a pint of tomato juice daily if he has vesical irritation, because one of the most irritating things to the urinary tract generally is tomato juice. If the stone were pure oxalate, it would not show in the roentgenograms. Oxalate and acid stones

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

do not show in the roentgenogram. If a person has an alkaline stone, the taking of calcium carbonate is not advisable because this will add to the calculus. Since the patient is elderly, it would be advisable for him to be on an acid ash diet, in which case tomato juice is indicated, if he has a renal calculus that is visible in the roentgenogram and is not dangerous to his life or health. Tomato juice, being acid, is perfectly proper for this elderly patient to take if his stones are alkaline, and, if they show in the roentgenogram, they must certainly be

PREECLAMPSIA

TO THE EDITOR—Please send any new information you have on the treatment of preeclampsia. A patient who is about three and one-half to four months pregnant bore twins in 1949 and had preeclampsia and convulsions after the delivery. She states that she had convulsions after the delivery off and on for the first 24 hours.

Carl B. Cone, M.D., Vancouver, Wash.

ANSWER.—The fact that the patient previously had preeclampsia and convulsions in 1949 does not of course mean that she will necessarily have preeclampsia in the present pregnancy. In view of the history, this patient should have more than ordinary prenatal care. Her blood pressure and urine should be checked at intervals of two weeks until the seventh month and weekly thereafter. Likewise, the weight should be carefully controlled daily by the patient herself. Treatment should be instituted if there is any undue gain in weight, elevation in blood pressure, or albuminuria. There is nothing new about the treatment of preeclampsia. The leading textbooks of obstetrics contain the treatment that is now considered to be satisfactory.

MORNING ERECTIONS

TO THE EDITOR—Are persistent morning erections considered normal? A 62-year-old patient complains that these sleep-disturbing erections have become particularly disturbing following a suprapubic prostatectomy in 1949 for a benign hypertrophy. The postoperative course was aggravated by a *Proteus* infection of the urinary tract but this has been brought under full control. The patient is well satisfied with results of surgery. He has nocturia once a night if at all. There were three attacks of severe colicky pain the last in December, 1951. Pyelograms during that period revealed no calculi, but after the first attack a right-sided hydronephrosis was seen which subsided spontaneously. Urine examinations were normal. The patient's erections were not alleviated by sexual intercourse if engaged in before retiring. His general condition is satisfactory. He is employed, drinks very little, has been a nonsmoker all his life and is normotensive. The blood serum was normal and there was no history of venereal disease. His only other complaints were pyrosis and flatulence of over 30 years' duration. What can be done to relieve him? Phenobarbital ½ grain (0.03 gm.) does not help.

M.D., California

ANSWER.—Morning erections are physiologically normal and may be observed in any age group. Bladder distention does not play an important part in producing the erections inasmuch as similar distention during wakeful hours produces no such effect. In this patient the cause of the disturbing erections is not apparent. Mention is made of three attacks of severe colicky pain but the distribution of the pain is not noted. However, if the pain was not centered around the perineum, it probably has no relation to the erections. In the absence of systemic disease, such as leukemia, to account for the erections the presence of a lesion in the posterior urethra should be ruled out. Endoscopic examination is therefore indicated. If these studies fail to reveal a cause for the erections the administration of estrogens may be necessary. Diethylstilbestrol in doses of 5 mg daily, or any other estrogen in equivalent dosage will probably eliminate the morning erections. The disadvantage of administering estrogen is that it makes the patient totally impotent. This can be overcome, once the problem is under control by periodic withdrawal of the drug and readministration, if and when necessary.

MYASTHENIA GRAVIS

TO THE EDITOR—A woman has abnormal fatigability and weakness. After she rests, her strength returns. She feels strongest in the morning. The muscles of the neck, throat, tongue, eyelids, eyes, and extremities are involved. She has bilateral ptosis and expressionless face and has difficulty swallowing, chewing and talking. There are no signs of atrophy or sensory changes. With quinine these complaints were exaggerated. While she appeared to have myasthenia gravis with injection of neostigmine (Prostigmine) 0.5 to 1 mg her symptoms increased in severity. After 45 minutes the reaction gradually ceased, and she felt better. This reaction occurs every time she has an injection of neostigmine. According to the literature the results must be immediate. However the patient feels well for 7 to 10 days and then requires another injection. She goes through the same reaction but goes along without any complaints of weakness for at least a week. Because of this initial response I feel that the diagnosis is not correct. However when she is receiving therapy with neostigmine orally she has no complaints of weakness and states that she feels better than she felt in her earlier years. What are some of the diseases that could be aggravated by neostigmine?

Joseph V. Waukins, M.D., Woodhull, Ill.

ANSWER.—The patient described has a history strongly suggestive of myasthenia gravis, including the response to quinine, but the intramuscular injection of neostigmine is followed by an atypical reaction the components of which appear to be a mixture of myasthenic symptoms combined with a cholinergic response. The cholinergic features would be expected to lessen at the end of 45 minutes or at about the time the patient experienced subjective improvement. It is untenable to believe that a single test dose of neostigmine would cause relief of myasthenic symptoms for a 7 to 10 day period. In view of these comments and the alleged relief of symptoms by an unknown oral dose of neostigmine, the possible functional origin of many of the patient's symptoms is suggested. Pursuant to this possibility, testing of the patient with edrophonium (Tensilon) chloride (Osserman and Kaplan, *J A M A* 150:265 [Sept. 27] 1952) and some other agent having a nonspecific action in myasthenia gravis, as for example, nicotinic acid, 20 mg intravenously, would be a logical approach in resolving the problems presented. The most common cause of death from myasthenia gravis is respiratory failure, to which cardiac features are secondary. This may develop quickly and unpredictably, but it is usually not instantaneous. Weakness with cholinergic symptoms may be caused by an overdose of neostigmine in patients with myasthenia gravis. The dose used in this patient is not sufficient to cause an aggravation of myasthenic symptoms unless other drugs having a similar pharmacological effect had been administered.

CLUBBING OF FINGERS AND TOES

TO THE EDITOR—Clubbing of the tips of the fingers and toes is observed in patients with long-standing pulmonary or cardiac lesions supposedly as a result of a low oxygen saturation of the arterial blood. Nowhere can I find an explanation of the mechanism of production of this phenomenon. I shall appreciate your opinion.

M.D., Illinois

ANSWER.—The exact cause of the clubbing of the fingers (hippocratic fingers) and ends of the toes is unknown. Swelling of the soft tissues is dependent on the unique capillary circulation in the ends of the digits, where some disturbance of the gas exchange probably occurs. The clubbing of the fingers and toes is usually limited to the soft tissues of the terminal phalanges and may be associated with thickening and curving of the nails. Clubbing of the fingers and toes in which bone changes have occurred and the simple type of clubbing both apparently have a common cause. These conditions occur in chronic pulmonary disease, as well as congenital heart disease and may even occur in acquired heart disease. In congenital heart disease cyanosis usually precedes the clubbing of the finger tips and ends of the toes.

ACUTE LYMPHATIC LEUKEMIA AND HEREDITY

TO THE EDITOR—Should a couple have another baby after the loss of one child who, at the age of 6, died of acute lymphatic leukemia? The child was, except for a malformed hand, healthy with only minor ill conditions. Both grandparents were first cousins, and cases of diabetes and hypertension run in both families. The young couple want another child but are afraid their second child may be prone to some hereditary defect.

M D, New York

This inquiry was referred to two consultants, whose respective replies follow.—ED

ANSWER—There is no contraindication to this couple having another baby. There is no good evidence that acute lymphatic leukemia is hereditary. The malformed hand could possibly be hereditary but, in the absence of a complete description, would more likely be due to some sort of trauma or possibly intra-uterine virus infection. One would have to admit that the diabetes and hypertension might possibly be transmitted to a child, particularly in view of the fact that the grandparents are first cousins. However, if the diabetes is on an arteriosclerotic basis, this is unlikely. The risk of transmitting hereditary defects to a child in this instance does not appear to be great enough to justify not having more children.

ANSWER—The decision as to whether or not these parents should have another child must be made by them. The following information may help them to make their decision. So far as can now be established, the chance of another child having leukemia would be extremely slight. There is at present little convincing evidence that this disease in human beings is inherited. The susceptibility to diabetes is probably generally inherited as a Mendelian recessive although cases of Mendelian dominance have been reported. Some investigators have concluded that susceptibility to diabetes is inherited as a dominant trait with low penetrance. It has also been considered that the mild cases are due to the heterozygous condition and the severe cases are due to the homozygous recessive condition. With simple recessive inheritance, both parents in question would at least be carriers of the defective gene and each child they have stands one chance in four of being susceptible. It is not certain, however, that the parents will not still have diabetes, since it is usually a disease of later life. If the disease develops in either parent, the chance of the child inheriting a susceptibility for it will be increased to one chance in two. Should diabetes develop in both parents, all of the children would be expected to inherit the susceptibility. Whether or not they would have diabetes would depend on environmental as well as genetic factors. The part insulin plays in the control of diabetes is a factor that should also be considered by the parents.

"OZONE MACHINES"

TO THE EDITOR—I would appreciate knowing what "ozone machines" are and whether or not there is any use for them in medicine. M G Radewan, M D, Wenatchee, Wash

ANSWER—In the popular vocabulary, "ozone machine" means an electrical apparatus in which air is drawn over a generator of ultraviolet radiation so that some of the oxygen (O_2) is converted into an allotropic form (O_3). The latter, called ozone, is extremely active chemically and destructive biologically, its irritating smell can be recognized in concentrations as low as one part per million, and it should not be tolerated in higher concentrations in occupational situations. It is much more toxic than carbon monoxide. Ozone generators have been used to cover up the odors caused by crowding, poor ventilation, and careless housekeeping in institutions, but the concentrations that can be used safely in occupied rooms are ineffective against common malodorous substances like butyric acid and against many important types of bacteria. Three forms of apparatus for this purpose were examined by the Council on Physical Medicine and Rehabilitation and were not accepted. As was stated in an editorial (J A M A 61:1045 [Sept 27] 1913), ozone "produces no reaction in the human organism that can be regarded as in any degree beneficial."

"NAIL SPITTING" BY LATHERS

TO THE EDITOR—A 38-year-old man with hypertension of 160/110 mm Hg and tachycardia at rest works in the lathing trade, during which work he "spits nails." When working with rock lath he uses a Jackson bar nail, which has a white coat that coats the mouth and lips. Can intoxication occur from prolonged exposure to these nails and is there any possible effect on the cardiovascular system?

Thomas B Hill, M D, Lowell, Mich

ANSWER—In times past "tack spitters" and "nail spitters" have acquired lead poisoning from lead in the metal or possibly from coatings on the metal. In the present instance, if lead poisoning exists, which is unlikely, hypertension might appear as one manifestation of that disease in chronic form. Many lathing nails are galvanized, and subsequently zinc oxide may form as a powder on the surface. Manifestly small quantities of zinc oxide would be harmless and would not be regarded as the cause of the hypertension. Some wire nails without galvanizing, in the process of extrusion, are lubricated by industrial soaps. Should this soap appear on the nail as driven, it is without significance to health. In any case, the practice of "tack" or "nail spitting" is not favored if for no other reason than the prospect of dental damage, the front teeth becoming serrated.

CALLUS FORMATION

TO THE EDITOR—What is the most effective treatment for callus formation at the angles of fingernails—in the inner angle of middle finger? This callus also extends subungually.

Allan Roos, M D, New York

This inquiry was referred to two consultants, whose respective replies follow.—ED

ANSWER—The first step in treating callus formation at any site, including the angles of the fingernails, is to remove any factor that seems to be causing irritation. In the case of the periungual area, this is often due to the habit of "picking" the skin at this site, this may be avoided by covering the affected part with adhesive tape, which may be left in place (change every second day) for as long as necessary to break the practice. The fact that the callus extends subungually suggests that the writer is referring to a periungual and subungual verruca. In this case, the probable treatment of choice is the removal of the wart with careful electrodesiccation, this is a more difficult procedure than the removal of verrucae on other sites of the hand, and the operator should be skilled in doing the procedure.

Finally, a callus may be removed at any site by the application of salicylic acid in appropriate concentration. One satisfactory method is the use of 40% salicylic acid plaster. Cut the plaster to the exact size of the site of the callus, apply, and hold in place with adhesive. Remove after about three days, soak part in warm water, and the softened callus is peeled off. This may be repeated as often as necessary. As noted above, the callus will recur if the source of trauma is not removed. Usually, the application of salicylic acid plaster will not be curative for periungual warts.

ANSWER—Some persons form calluses easily at pressure areas, such as finger tips, palms, and soles. In a few, hypothyroidism may be a factor and the administration of thyroid is helpful. Violinists and others subject to callus formation at the finger tips get relief by the use of a pumice stone. This is a simple and practical method. A little experience with it will teach the user just how far to go to avoid irritation. The callus can be softened with a 5 to 15% salicylic acid application and then pared away. Another way of doing this is to apply fitted strips of salicylic acid plaster kept in place by adhesive or Scotch tape. These may be left on two days or only overnight to soften the callus before paring. Freezing the callus lightly with a carbon dioxide pencil after softening it may slacken its regrowth. At times chronic dermatoses, such as psoriasis, fungous infection, or eczema, may simulate callus. In such cases there are likely to be some accompanying telltales, such as changes in the nails, when the contiguous soft parts are involved.

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HOSPITAL PRIVILEGES FOR GENERAL PRACTITIONERS THROUGH A SURGICAL EVALUATION COMMITTEE

CHAIRMAN'S ADDRESS

Frederic Ewens, M D , Manhattan Beach, Calif

There has probably been no time in the history of American medicine when one component part of medicine has been more viciously bombarded than has the general practitioner in the past few years—and biblically reminiscent—by his own brother. From a philosophical point of view, it has always been a challenge to outclass a good man in any field of endeavor, and medicine is no exception. In viewing the entire panorama of the past five years, I am inclined to believe that few of the injustices performed are the desire of any one specialist or even a majority of the specialists in any one organization. The officials of the American Medical Association have not sanctioned the criticisms heaped upon the medical profession in general and the general practitioner in particular, but I am inclined to question the attitude of those who control or those who speak in behalf of the specialty groups. Far too many times the individual is sacrificed for the organization's desire for power and prestige or for the director or executive secretary who wishes to foster his own personal ambitions. I have seen medical study clubs formed with only one objective in mind, to convene, study, and discuss medical problems, slowly transform into a bitter collection of one-sided personalities so remote from the original group as to be hardly recognizable. Perhaps it would solve a host of problems if tomorrow we should awaken to find all separate groups of physicians disbanded and only one remaining, the American Medical Association. Unfortunately at the moment this is too much to expect, and we are forced into keeping astride with the specialist, the special atomic specialist, and similar groups. For example, one of my friends offered to admit me as a charter member in his new specialty group, the Interplanetary Surgeons.

DISCRIMINATION AGAINST GENERAL PRACTITIONERS

In the past seven years, you have heard of the growth of the American Academy of General Practice. If you have read *THE JOURNAL*, you will note the increase in numbers of hospitals incorporating general practice sections. Medical skill has improved so much that I am sure

general practitioners are capable of giving good medical care to 85% of the nation's ill. The public is demanding more and more capable family doctors. I do not agree with the idea that family physicians should assume the role of family counselors and refer all patients to our specialist friends, nor do I agree completely with Dr. Paul White, who says, "The worst doctor today is better than the best doctor of 50 years ago." However, I do say that the general practitioners today are superior in scientific knowledge of medicine to their counterparts of yesteryear. The philosophy of medical care has always been to give the patient the best care possible and a cure of his ailment if it is at all possible. All physicians believe in that philosophy, both general practitioners and specialists. I believe that a young man should be trained in a specialty if he so desires. It should make him better trained when he finishes his residency than the intern who just finishes his stay in the hospital. Yet neither one is trained in the simple complaints of patients. The young physician who has just finished his internship makes mistakes, but they are usually minor. The older men make mistakes as well. During my 34 years of practice, I have seen many of these men, who now complain about useless surgery, doing that very thing.

Not only the public is being bombarded with discriminatory stories against the general practitioner but the hospital administrators get their share of stories. Some hospital administrators are influenced by them to keep men off the staff or may refuse them privileges regardless of their ability. Physicians lucky enough to practice in communities without such problems cannot appreciate these difficulties. I am acquainted with physicians who through years of experience and training are qualified but are denied privileges in hospitals because they do not belong to a specialty group. In my work in the General Practice Section and as a past official in the academy in the state of California, I have listened to many general practitioners complaining that they can not get on the staff of a metropolitan hospital, and, if they are lucky enough to be admitted to the staff, they cannot

get on the surgical staff or advance in their staff status. During these conversations, they tell me that they wonder if they made a mistake in becoming a general practitioner. This is discouraging. I remember standing in back of two ex-G.I. physicians taking a residency in the specialties. During their conversation one of the young physicians said, "I can't afford to spend the time in a residency, but if I don't get a Board I can't get on the staff of my hospital at home." It is not my purpose to discuss the argument that all physicians should be permitted to belong to the staff of their hospital irrespective of their ability. My point is that all physicians applying should be judged according to their ability, as well as to their school, character and similar considerations. Hospital administrators tell me that they are not to blame if a physician is not on the staff. They place the blame on the hospital executive committee of the staff and its credential committee. Most physicians know the actions of the staffs and their committees in the large hospitals, let it suffice to say that the general practitioner does not fare well.

Dr. John Fulton of Yale told of a well-known dean with many forward-looking ideas who, being frustrated by his faculty, exclaimed "It is easier to move a cemetery than change the curriculum." Applying this thought to the rules and regulations of constitutions of hospitals in many places in the United States, it would take an act of God to permit a capable general practitioner to perform surgery or even to get on the staff. One can appreciate the tremendous education and effort needed to change the present status of the general practitioner in some hospitals. The hospital association has said their responsibility is to see that the patient gets the best possible service. We must answer this statement with the fact that a capable, conscientious family physician is capable of giving that service.

SURGICAL QUALIFICATIONS

During the past six months a new hospital was built about 10 miles from my home. It was to be an open hospital for general practitioners, many of whom worked hard to raise funds for the hospital. When the hospital formed its staff, the general practitioner was told that he could not do the work he felt he was capable of performing. The situation in this hospital has now become very serious. After being in the midst of the problems besetting the work of the general practitioner in various hospitals and in our hospital in particular, I felt that a solution should be conceived that would be fair to the certified man and to the qualified general practitioner and that would give the young general practitioner an opportunity to qualify himself and allow him to advance in his status at the hospital. Since the bone of discontent with physicians seems to center around the department of surgery, it was my belief that a special committee should be instituted to handle the surgical problem.

In the years before we instituted the new committee, our small hospital placed a new physician on the staff according to the school from which he graduated and the character references he presented. He was permitted to do only minor surgery unless he was certified. After he had spent a selected number of years in surgical work, he was permitted to apply for senior rating. The senior

men who assisted in his surgery were then asked if they thought him qualified to become a senior surgeon. If there were no dissenters, he was placed on the senior staff. This senior rating permitted him to do major surgery. Many men listening to a statement of this sort would immediately say, "This is intolerable and the results must have been terrible." During my years of practice most of my work has been in obstetrics and gynecology. After hearing the furor raised about the poor ability of the general practitioner, I made a 10 year study of the maternal deaths, the infant deaths, and the results of breech presentations. I wanted to compare these statistics with the average in the state and with a hospital whose work was done by specialists. These are the results: maternal deaths amounted to 0.06 compared with the over-all 3 in the state, infant mortality amounted to 1.5 compared to 3 in the state, breech presentation statistics were equal to those taken from a large specialty hospital in New York City. The statement that the work must be terrible can thus be refuted, and we can assure the public that the general practitioner is capable of giving good medical care in our hospital.

Evaluation Committee—After World War II, we began to get a number of young certified men in our district. They were admitted to our staff, and soon thereafter our problems multiplied. Criticism of the older men and new men on the staff was heard, and the surgical committee's work was increased. I decided that it was time to draft a preliminary amendment to the constitution of our hospital. After months of meetings, a special committee that was not bound by the old traditions of the credential or surgical committees was formed. It would relieve the credential committee of deciding on the ability of the new applicant and would permit the surgical committee to check the decisions of the new committee. The amendment would also permit adjudication of any discussion by the new committee as well as the grievance committee before it exploded in the executive committee of the hospital.

To add another committee to the already heavily loaded hospital staff at first seemed a bit superfluous to the credential and surgical committees. They had many arguments against it, all of which resolved themselves after months of debate. The primary purpose of this committee was to make it possible for the new applicant to show the surgical committee that he could do the surgery that he claimed he was capable of doing, whether he was certified or not. In order to give him this opportunity, the committee so chosen was to consist of an equal number of both general practitioners from the senior surgical staff and the certified surgeons from the senior staff. This committee would be referred to as the Surgical Evaluation Committee. The first paragraph of the amendment reads as follows: "The surgical evaluation committee shall consist of six members and the chief of the surgical committee who shall be chairman of this committee. The members of this committee shall consist of three surgeons who are diplomates of American specialty boards, fellows of the American College of Surgeons, or fellows of the International College of Surgeons, together with three general practitioners who are members of the senior surgical group." From the type of membership of this com-

mittee, it is evident that there can be no complaints that there are no general practitioners on the committee to judge, nor can they say the specialty groups control the decisions

The next paragraph in the amendment makes it mandatory that each member serve for a term of three years and that the term of office be staggered so that there will always be men on the committee who are experienced in judging an applicant. This reads as follows: "The term of office of the members of the surgical evaluation committee shall be three years. Each year two members will be appointed for a term of three years. The original appointments shall be for one, two and three years. The appointments to the committee each year shall be one from the certified group and one from the senior surgical staff of general practitioners."

Group Classification—After developing the amendments to the constitution this far, we began to get into trouble. Many physicians were undecided about the number of classifications we should have in our surgical department. Opinions on the necessary numbers ranged between 3 and 15. In a hospital near our locality, they classified their surgical staff into three groups. In our hospital we classified the staff into four groups, however, the number of groups necessary is debatable. The more groups decided on the better chance the committee would have to classify the applicants. The smaller the number of groups the simpler it would be for the superintendent or surgical supervisor to control the surgical schedule. The certified surgeons preferred the three groups. The Hawthorne Hospital Constitution, which uses three groups, reads as follows: "Group classification. The surgical evaluation committee shall tentatively classify all applicants for surgical privileges into group I, group II, group III for a term of six months. Permanent appointments shall be made after the six months tentative period, and if a review of the work done is acceptable to the preceptors assigned to observe and a favorable report is submitted to the surgical evaluation committee who forwards the report to the executive staff."

We believed that the policing of the work during the probation period was part of the responsibilities assigned to the surgical committee, and we felt that the chairman of the surgical committee would be in a better position to assign capable men from the surgical staff to the job of observing. Therefore we placed the following paragraph in at this point: "The chairman of the surgical committee shall assign three qualified senior surgeons from group I and group II to observe and return a written report on the candidate who has been tentatively classified by the surgical evaluation committee."

The method used in determining who should be classified in group I was simple. The certified surgeons laid down the criteria that all men who were certified by the American Boards, American College of Surgeons, or the International College of Surgeons should be in this group. After much discussion they accepted the criterion that any surgeon who by reason of training and years of experience could do any type of major surgery should be included in this group. Therefore we have defined group I in our amendment as follows: "Group I—Applicants shall be those surgeons who are certified by the Boards

of Surgery fellow of the American College of Surgeons fellow of the International College of Surgeons those surgeons in a specialty group and those surgeons who have by training or years of experience qualified to do any type of major surgery. Any major surgery beyond their specialty must have another member of group I to share responsibility."

The classification of members in group II caused difficulties. Those physicians in the first classification felt that we should use the same criteria that were used in the early days of the American College of Surgeons and the International College of Surgeons, a proper number of major surgical procedures had to be done under qualified preceptorship, with each case written completely and the results satisfactory. I do not know of anyone but the most rabid opponent who could object to this idea. Therefore it was decided that the amendment would read as follows: "Group II—Applicants for this group shall be general surgeons who have by years of experience or training qualified to do general surgery. The minimum requirement of training for this classification shall be three years or more of graduate training in general surgery with a recognized qualified surgeon under preceptorship plan acceptable to the evaluation committee and assurance that the candidate has done at least 100 major operations of various types in which he is the responsible surgeon, all of which have been carefully recorded and show acceptable results."

Group III applicants were all new applicants to the staff who wished to do surgery and who did not limit their work to the nonsurgical specialties. It was felt that nonsurgical specialists should apply for surgical privileges. They were considered general practitioners if their surgical work did not exceed 10% of their practice. Following are the requirements for group III: "Group III—Applicants for this group shall consist of all surgeons and general practitioners who do surgery but do not have the qualifications for group I or group II. Surgeons in this classification shall have a member of group I or group II as an assistant in major surgery. Any surgery undertaken with which the surgeon is not familiar or has had only precursory experience must have as an assistant a member of group I or group II who is well versed in that particular field. Any infraction of these rules calls for severe disciplinary action by the executive committee of the staff. Any member of this classification may act as assistant in any major surgery."

Preceptors—I have heard young men complain of their lack of opportunity to improve their surgical ability, that qualified surgeons would not teach them surgery. They were told to go back and take up a residency in surgery. These young doctors, who had families, told me that they could not afford to leave their families since they were not economically able to study. They said that, since they had to have performed 100 major operations, it made it difficult to raise their classification unless a qualified preceptor would devote the time and energy to teach and assist them so that they would be able to have 100 major operations in three years' training. We had trouble convincing the surgeons to devote their time in preceptorship unless they received adequate compensation. We therefore permitted the surgeon who was on

the preceptor list to make any arrangement about compensation that was satisfactory to himself and to the young doctor. There were cries of split fees, but since the young doctor acted as assistant for part of his preceptorship we did not feel that this situation was breaking ethics any more than it did in graduate school training or in clinics where the same conditions prevailed. When the preceptor felt that the young physician was qualified, the young physician was permitted to act as the surgeon himself.

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and

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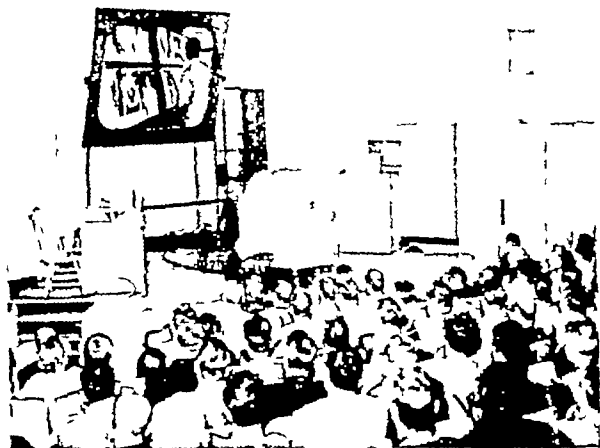


Fig. 1—Boston audience viewing *Telecolor Clinics* on giant screen projection receiver

from 9 a m to 6 p m. At first glance, the over-all time devoted to preparation of each program may seem excessive, however, it soon became apparent that this amount of time was mandatory to achieve a smooth, coordinated production that would be an effective teaching tool when used later as a movie film. Occasionally short cuts were arranged for those participants who had had previous experience in the field of television. Throughout the series the CBS field sequential system of color television was used. The usual microwave television relay circuits of the New York Telephone Company were employed. The program was microwaved from the originating hospital to the Empire State Building and thence distributed to CBS network facilities leased from the American Telephone and Telegraph Company. At each receiving site the program was microwaved from the network terminus to the local auditorium. It is the purpose of this report to present the results of experience with the physical organization of the series and data relating to the methods of preparation and presentation of visual material through the medium of color television.

STUDIO FACILITIES

The studio at the Francis Delafield Hospital was constructed in the basement of the building. An adjacent room served as a control room. At the Memorial Center the hospital auditorium was converted into a studio and control room by removing the seats and building a soundproof wall across the room. Kinescopic equipment at both institutions was housed in rooms immediately adjacent to the control room. Roughly 1,300 sq ft of space were required at each hospital to house the television operation. One of the greatest difficulties encountered was obtaining adequate ceiling height for hanging lights. 12 ft is an absolute minimum. Actual studio con-

struction was assigned to contractors who were experienced in the design and requirements of television studios.

Lighting and Staging—Lighting problems were similar to those encountered in black and white television with the exception that slightly greater light intensity is required to yield good color reproduction. In addition, the intensity of the lighting must be maintained as uniformly as possible, this can be likened to the preparation of color movies. Problems of wiring and electrical circuits were resolved by the engineers of CBS, and installation was done by electrical contractors. Four different sets were used, these consisted of three 5 ft 9 in sections each, with a window section and joining columns and corners. All sets were interchangeable and relatable. Draperies, roll screens, and folding screens were also used to join areas. The sets were made of fiberboard or canvas on wood frames. The latter proved entirely satisfactory, and although they required greater care in handling, they were lighter, less expensive, and more easily stored. Background colors are extremely important, because they affect the color of objects and persons seen in the foreground. Cool colors, such as light blue, gray-blue, and soft green were found to be most satisfactory. A



Fig. 2.—Pedestal type studio camera and arm of perambulating boom in operation during typical broadcast.

tilated examining area was prepared, as well as conference and office study areas of varying degrees of formality (controlled by accessory decoration). The usual white laboratory coats could not be used, because they produce excessive halation in the television picture. This difficulty was overcome by dyeing the coats a light gray that appeared white on the screen.

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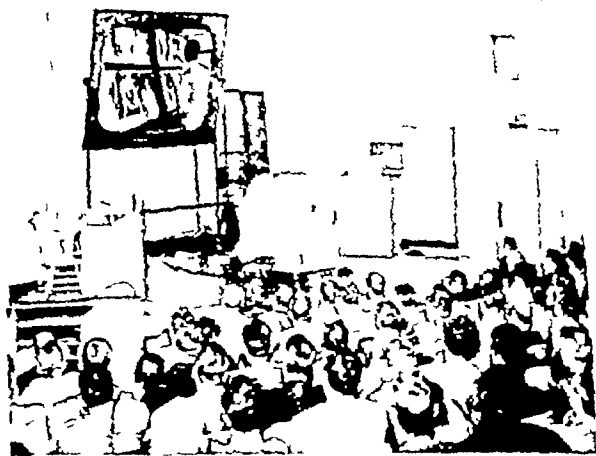


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Fig. 2—Pedestal-type machine in operation during typical broadcast

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make the cost of art work prohibitive. The only exceptions to the three to four ratio were anatomic drawings of the full figure or other vertical subjects. In such cases the dimensions were 20 in across and 30 in in height. The size of the card is of no consequence as far as the viewer is concerned as long as the camera gets in as close as the material permits. The drawing will fill the receiver screen, whether the original card is 6 in or 6 ft wide.

In laying out material for a graph or chart of 18 by 24 in dimensions it is well to design the layout with a margin of at least 2 in on all sides, e.g., 14 by 20 in. On such a chart or list the printed matter is limited to 7 lines of type, and 15 letters to a line. This requires simplification of content, as well as careful abbreviation of words. Charts and graphs in medical journals are designed for study and referral, they can and usually do contain a great deal of information. When such material is used on television it must be condensed to make a single point or indicate a trend. If more than one point must be made it is better to prepare two simplified charts that are readable. Simplification is also essential in preparing anatomic material and other types of representative art work. Fine detail takes considerable time in preparation and is, therefore, expensive, more important, it may fail to reproduce well.

Backgrounds, Overlays, and Surgical Specimens—Although solid black areas or backgrounds are undesirable in black and white television because of "blooming," they work well in color television. After experimenting with both gray and colored backgrounds for renderings, black was chosen because it gives maximum brilliance to rendered area, the screen outline offers a minimum of distraction, and the black background is easier to clean or retouch.

Frosted acetate overlays with surface drawings were used frequently to superimpose graph lines, add additional anatomic detail, describe operative procedures, or allow the physician to draw with colored chalk on a basic diagram (fig 4). The overlays were placed directly on the surface of art work. The following disadvantages of overlays were noted: 1. Renderings directly on the overlay are extremely fragile, they scratch and soil easily under studio handling. 2. The acetate tends to buckle under the heat of studio lights and may cast disturbing reflections. 3. Each layer of acetate tends to gray the area underneath, lightening the dark areas and darkening the light areas, thereby reducing the definition of the original. Alternatives used included opaque "hang-on" areas in sections and jigsaw-type "pull outs" where applicable. The presentation of gross surgical material offered no major problems. Operating room and autopsy specimens were kept frozen until the afternoon of the program, at which time they were allowed to thaw. The specimen was pinned to a cork board and demonstrated in the routine manner. Old specimens or those that had been fixed in formaldehyde were unsatisfactory because of color loss and lack of flexibility.

Black and White Photographic Prints—Black and white photographic prints were avoided unless they made some very specific point, e.g., an old case report before

the days of color photography or an infrared photo to show distended veins. A matte finish is recommended to prevent surface reflections. An acetate overlay may be used when the print is glossy.

SPECIAL TECHNIQUES

Plaster anatomic models were used effectively to identify anatomy, explain operative procedures, demonstrate techniques of radiation therapy, and illustrate diagnostic methods. These models are standard equipment at most medical schools and some supply houses and are readily utilized in the medium of television. Sponge rubber models have opened up a new field in visual education. In addition to the advantages of the plaster model, the sponge rubber model has flexibility that allows the insertion of an instrument or examining finger. Techniques such as proctoscopy can be shown on a sagittal section pelvic model or bronchoscopy on a corneal section lung

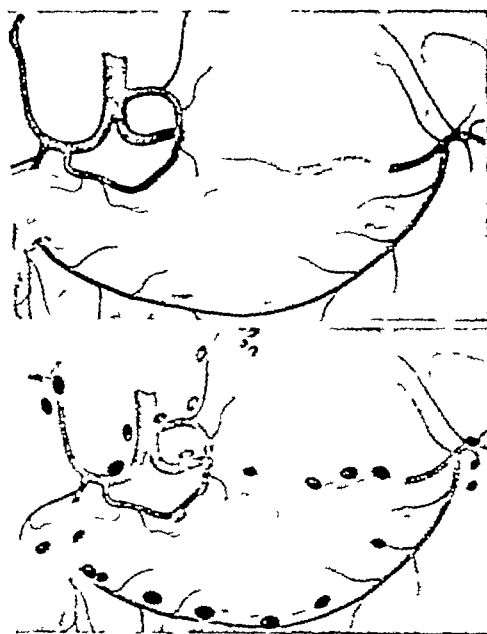


Fig. 4—Top, diagram of gastric blood supply. Bottom, acetate overlay superimposed to show lymph node distribution.

model. The model can be sculptured from blocks of sponge rubber and then painted to provide a life-like quality.

The magic board, a "flannel board" measuring 3 in high by 4 in wide, is effective for demonstrating sequential development, grid diagrams, chemical structural changes, and degrees of conventional or radical operative procedures. The board has a fiberboard base with a rayon viscose fiber covering. It employs visual symbol cards prepared from sheets backed with rayon viscose fibers that adhere with little pressure and are easily removed. Lettering or art work may be drawn or glued on the surface of the sheets. Jigsaw diagrams were occasionally used to explain operative procedures. A basic diagram was cut into its component parts and as the physician narrated he was able to remove organs and replace them to show the extent of surgical excision. The diagrams were made of wood or pressed paper and were supported on an ordinary easel.

A magnetic board was also used. This is a drawing on light weight illustration board that, in turn, is affixed to a thin iron panel. Supplementary material is attached to flat permanent magnets that will then adhere to the vertical surface of the chart (fig 5). Pointers were colored plastic knitting needles of varying sizes. The physicians were carefully instructed in the technique of pointing to visual material. Movements must be precise and accurate rather than broad and sweeping. Sudden rapid motion of the pointer produced a disturbing stroboscopic effect on the television screen. Blackboards were generally unsatisfactory, because the background did not erase cleanly. Our experience was limited to composition boards, perhaps the use of a slate blackboard might obviate this difficulty.



Fig 5—Magnetic board with small disks representing metastases from primary renal carcinoma

A revolving drum similar to the kind used for "credits" in black and white television was occasionally employed for presenting long lists that did not compose well within the three to four ratio of the television screen. Tape recordings were essentially untried except for one program on psychiatry, in which they were used for background music in specially photographed dream sequences. Future use may be considered in the presentation of recorded patient-physician interviews. Colored chalk for use on overlays was selected primarily for contrast with the background colors.

Both hospital patients and outpatients appeared in the medical presentations. Due to the nature of the disease under discussion special precaution had to be taken to keep the patients from learning their diagnosis if they were not already aware that they had been treated for

cancer. The most effective types of patient presentations appeared to be those in which lesions were demonstrated or post-therapy results were illustrated. Least effective were the simple interviews that noted a long-term survival and little else. Dramatic effects were obtained with groups of patients whose histories were being discussed by a physician out of camera view and out of earshot of the patients. For legal purposes, all participants were requested to sign release forms. In order to demonstrate certain aspects of physical examination both male and female models were employed. More specifically, the use of live models was confined to female breast, pelvic, abdominal, and head and neck examinations and to the localization of neurological levels.

Kinescopes—The kinescope machine, newly devised by the CBS Research Laboratories, was one of the first machines used for a regular series of color television recordings. The mechanism of operation consists of photographing the television picture on commercial color film. Duplicate copies are reproduced from the picture and sound track originals to provide a composite print. The kinescope recording apparatus accommodates 1,200 ft. of film, enough to record about half an hour of program. Thus it was necessary to reload in the process of recording a one hour program. To prevent loss of continuity, that portion of the program that would be lost during reloading was kinescoped in advance of the air show for subsequent splicing into the final film presentation. It is hoped that prints of the kinescopes will have wide distribution to county medical societies, medical schools, and other groups for showing at regular sessions. In this way, those who were unable to see the live presentations can view the programs by simple movie projection.

444 E 68th St (21)

The Attitude of the Physician—The persisting preoccupation with an almost exclusive physical, chemical and bacteriological orientation in under-graduate curricula is not in keeping with present-day knowledge. It clings to the past and is influenced by the technological trends of the Western world. The rediscovery of the patient as a person constitutes an important challenge to medicine today. The prevalent attitude of physicians toward their patients has been heavily influenced by the attitudes which characterized their teachers in the medical schools and in their postgraduate training. From them they learned, and they continue to learn, the organic etiology of disease, the importance of differential diagnosis and the chemical and surgical management of diseased organs, structures and systems. They are also receiving an increasing amount of under-graduate instruction in psychiatry. In these courses, they learn about the development of personality, the psychodynamics of the neuroses and the etiological factors and emotional significance of the psychosomatic affections. What they are taught about the psychological origin of somatic symptoms and psychopathology is in such contrast to what they are taught in medicine and surgery, in bacteriology and in histology that many students regard illness either as functional in origin or as organically determined. Subsequently, they are unable to utilize what they have learned in the department of psychiatry in their daily practice of medicine. In their attitude toward their patients they perpetuate the body mind dichotomy, and their potentialities for rendering a quality of medical care commensurate with current knowledge about sickness and health are necessarily restricted.—L. H. Bartemeier, M.D., *The Bulletin, Georgetown University Medical Center*, May 1954.

ACUTE SUPPURATIVE ARTHRITIS OF THE HIP IN PREMATURE INFANTS

Donald W Ross, M D, Los Angeles

The occurrence of acute suppurative arthritis of the hip in newborn infants is a pediatric emergency that is seen infrequently but presents a very serious and urgent problem when it occurs. Too often an early diagnosis is not made, and irreparable damage to the hip joint has taken place before the seriousness of the illness is fully understood. In the past two decades the advent of antibiotics has considerably reduced the incidence of septic lesions of the joints and osteomyelitis in children, however, as Blanche¹ recently showed, the frequency of osteomyelitis in infants under 1 year of age has not been reduced, despite the most modern and up-to-date facilities, drugs, and care. A critical analysis of the failure of modern medicine to show favorable advances in the incidence of pyogenic arthritis and osteomyelitis in infants should be made. The purpose of this paper is to illustrate the extreme necessity for early diagnosis in the management of acute suppurative disease of the hip in infants, more specifically, in the premature newborn.

The baffling orthopedic problem that a young child with complete destruction of the head and neck of the femur presents to the orthopedic surgeon and the frequency with which this end-result occurs when an acute suppurative arthritis of the hip was the destructive agent initiated an investigation into the history of such patients in this hospital. It was found that in the past four years five cases of acute suppurative arthritis of the hip had occurred that were unrecognized for varying lengths of time. It may be significant that all of these cases occurred in premature infants. The scope of this paper is limited to the early recognition and diagnosis of the process. In the medical literature, many excellent reports describe the end-results of septic lesions of the hip in infants and cover the subject of their treatment. Badgley² described the end-results in 113 cases, Harmon³ has adequately discussed the surgical treatment of the residual deformity, and there are many other contributors to this subject. It is interesting to note that in almost all reports of a series of cases of septic lesions of the hip statistics are given as to the duration of local symptoms or signs before diagnosis is made. Any delay whatsoever in dealing with a case of acute pyogenic arthritis of the hip may spell disaster, since it is well known that the cartilagenous constituents of the hip joint of an infant may be destroyed in a matter of hours by an acute suppurative process. In Nicholson's⁴ series the lapse of time between the appearance of local signs and recognition of the infection was five days to three months. Blanche¹ states that in the cases studied the symptoms had persisted for at least a week. This delay represented the time between the appearance of local signs while the child was in the care of his parents and the first examination by the physician. In this paper, however, I am dealing with a different group of patients—premature infants who have not yet left the hospital. In the five cases described below, from six days to 16 months elapsed after the onset of the initial local signs and

symptoms before the diagnosis was established. To my knowledge, no previous collection of cases of acute suppurative arthritis of the hip in premature infants has appeared in the literature.

CLINICAL MATERIAL

All the cases of acute suppurative arthritis of the hip in newborn infants that had been reported in this hospital in the past 10 years were reviewed. It was found that 18 cases had occurred and that 5 of these were unrecognized for a considerable period of time before the diagnosis was made. Surprisingly, in every instance in which there was a delay in diagnosis the patient was a premature infant. A likely portal of entry for a blood-borne infection to the hip was present in four instances (see table). The average age at the onset of symptoms was 12 days. The first clinical signs recorded in four of the five cases were swelling of the buttock or thigh, or both, in the remaining case, a flexion contracture of the hip was the first sign noted. A high temperature was present in only two of the five patients. Among the presumptive diagnoses made was thrombophlebitis in one patient, abscess of the thigh in another, and cellulitis of the upper thigh in three. In two patients spontaneous rupture of the infected joint apparently occurred, an abscess appeared in the thigh that was drained by an incision, but there was no recognition of the hip joint as the source of the abscess. In the three cases in which cultures were taken the organism identified was *Micrococcus pyogenes* var. *aureus*. In all but one of these patients the diagnosis was eventually made by roentgenograms after destructive changes had taken place and a pathological dislocation had occurred. Aspiration of pus from the hip joint confirmed the diagnosis in one patient.

REPORT OF CASES

CASE 1—A Negro girl was born in October, 1949, after normal, spontaneous labor without anesthetic. The general condition was good. Physical examination revealed a normal premature infant 4 lb 5 oz (1,956 gm) in birth weight. The patient was admitted to the premature nursery in an incubator and was given vitamin K, injected intramuscularly into the gluteal regions, a total of four times in the first two days. Progress was somewhat slow, and the birth weight had not been regained on the 12th day. On the 14th day there was a sudden elevation of temperature to 102 F, and 24 hours later the right buttock was noticed to be slightly swollen. A diagnosis of low grade cellulitis

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Drs. Carmelo C. Vitale and Robert F. Warren aided in the preparation of this material.

1. Blanche D. W. Osteomyelitis in Infants. *J. Bone & Joint Surg.* 31-A: 71-85 (Jan.) 1952.

2. Badgley C. E., Yglesias L., Perham W. S. and Snyder C. H. Study of the End Results in 113 Cases of Septic Hips. *J. Bone & Joint Surg.* 18: 1047-1061 (Oct.) 1936.

3. Harmon P. H. Surgical Treatment of the Residual Deformity from Suppurative Arthritis of the Hip Occurring in Young Children. *J. Bone & Joint Surg.* 24: 576-585 (July) 1942.

4. Nicholson J. T. Pyogenic Arthritis with Pathological Dislocation of the Hip in Infants. *J. A. M. A.* 141: 826-831 (Nov. 19) 1947.

DIAGNOSIS

An early diagnosis could have been made in each of the cases described above if the hips of the infant had been carefully examined when the first local signs developed. One must not overlook the fact that acute suppurative arthritis of the hip in a newborn infant can and does occur. The differential diagnosis includes cellulitis, superficial abscess, and thrombophlebitis. Trauma, con-

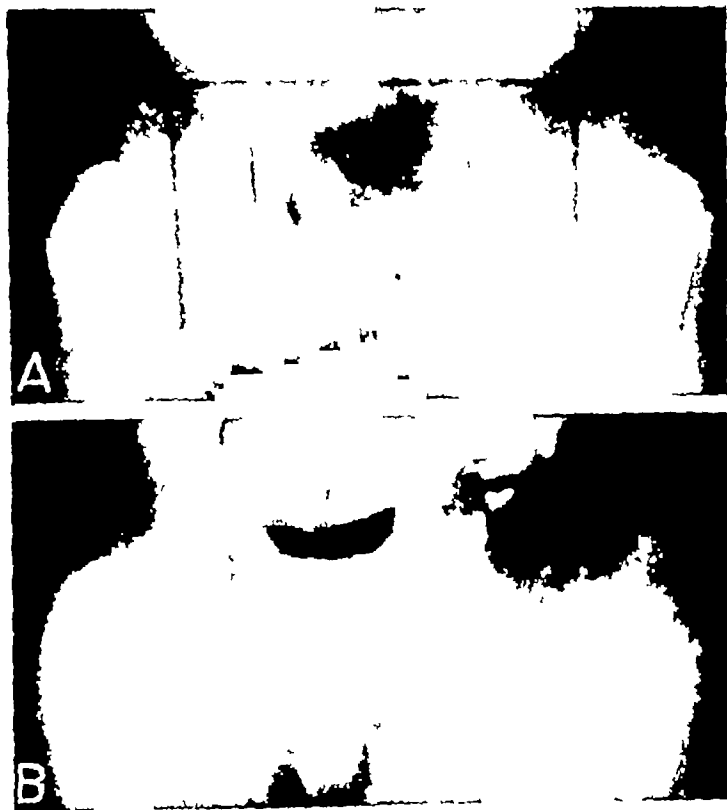


Fig. 4—A roentgenogram of the patient in case 4 initially thought to be normal. Close scrutiny reveals pathological dislocation of the left hip from an unrecognized acute suppurative arthritis. B second roentgenogram of patient taken three weeks later, revealing advanced destructive changes in the femur and pelvis.

genital abnormalities, and acute poliomyelitis must also be included, however, the latter group of conditions can be distinguished readily, since the septic lesion of the hip is a sudden infectious process and, in almost all cases, the four cardinal signs of local inflammation are present. When these findings occur near the hip of an infant the knowledge that an acute pyarthrosis can occur directs attention to the joint itself, and an erroneous diagnosis of an infection of the superficial tissue can be avoided.

Once the hip joint itself has fallen under suspicion, the additional diagnostic physical findings that should suggest intra-articular disease are (1) flexion contracture, (2) restriction of abduction, and (3) deepening of the transverse gluteal crease or presence of an extra skin crease. A newborn child lies either face down or on his back with legs flexed and abducted in a "frog" position. By pulling gently on an infant's ankle in an effort slowly and carefully to extend the thigh, a flexion contracture of the hip can be detected. It also may be necessary, in examining for a flexion contracture, to flex the opposite thigh on the abdomen while the range of extension is tested in the suspected joint. By comparing the amount of abduction available with the hip flexed to 90 degrees

with that possible in the opposite hip, a restriction of this motion may be shown to be present. In most newborn infants the thighs may be abducted in flexion to the horizontal. Restricted abduction suggests a pathological dislocation, and roentgenograms may confirm such a suspicion. Deepening of the transverse gluteal crease and the presence of an extra skin crease should arouse suspicion but are of doubtful value, since such findings are present in many infants with normal hips. In the presence of these findings, together with those of inflammation, the preliminary diagnosis of an acute suppurative arthritis of the hip should be made and the joint promptly aspirated with a large-bore needle. Treatment depends on the result of the aspiration and may include open drainage of the joint and fixation in an abduction spica cast. Early roentgenograms cannot be depended on for an early diagnosis, and, indeed, it is the aim of the treatment that no abnormal roentgenologic findings appear. Needless to say, aspiration and roentgen examination are tests that should be used to confirm a suspected suppurative arthritis after the clinical diagnosis has been made.

From a critical evaluation of the management of the cases described above, the following postulates are proposed: 1. An infant with any infection, however insignificant, should be considered potentially to have a septic lesion of the hip. 2. Enlargement or swelling of the leg, thigh, buttock, or groin in an infant must always be considered to be an early sign of an acute suppurative process in the hip. 3. All infants with infection should be tested daily for limitation of flexion and abduction of the hips. The maneuvers are simple and are easily and quickly performed while the patient lies on his back.

COMMENT

The fact that all five of these unrecognized cases of acute suppurative arthritis occurred in premature infants has aroused much interest, and the general management



Fig. 5—Normal roentgenogram of the patient in case 5 made seven months and three weeks after treatment by open drainage of acute suppurative arthritis of the left hip which was done seven days after onset of signs of inflammation.

of these patients has been surveyed in an effort to discover one common contributing factor. In all but one of the cases a known primary infection was under treatment. The susceptibility of the premature infant to infectious processes needs no emphasis here, nor can a claim be made that therapy of infections in premature children

is grossly different from that used in the normal newborn. The conclusion remains that during the concentrated efforts directed toward feeding problems, hematological problems, and the other burdens of the premature infant, there is no emphasis on the diagnosis of such complications as septic lesion of the hip. Finally, the selectivity for the hip joint that pyarthrosis seems to show in this series needs consideration. The buttocks, thighs, and legs of the patients were the commonest sites of therapeutic or diagnostic use of the hypodermic needle, as in the repeated vitamin K injections. However, the scalp veins were used for transfusions in two instances in this series. To my knowledge there is no published record proving that the pathogenesis of an acute pyogenic process in the hip joint of an infant began with the unintended introduction of a nonsterile instrument into the adjacent soft tissue or through the capsule and synovia. I do not believe that the occurrence of a suppurative lesion of the hip in an infant is the result of direct extension to the joint from a nearby primary infection. There is little question that the simultaneous presence of a pyogenic distant infection in four out of five cases was not coincidental.

SUMMARY AND CONCLUSIONS

In five cases of acute suppurative arthritis of the hip in premature infants treatment was delayed because of failure to make the diagnosis. Serious, permanent injury resulted, except in one patient who received comparatively prompt treatment and in whom a good result is expected. My study of these cases leads me to believe that the infection of the hip resulted from a hematogenous spread from a distant focus rather than from intragluteal injections or venepuncture in the region of the hip. Acute suppurative arthritis of the hip in a newborn child is difficult to diagnose in the early stages and may be entirely overlooked. This is especially true in a premature infant, since there may be no detectable systemic reaction. A serious error can be made if a disease process within the hip is not included in the differential diagnosis of local signs of inflammation in the groin, buttock, or thigh. The diagnosis should be established by the detection of early physical signs and immediate aspiration of the hip joint. When treatment is delayed until changes are visible in the roentgenogram, the damage to the joint is usually extensive and crippling.

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TREATMENT OF SYMPTOMATIC GIANT AIR CYSTS OF THE LUNGS

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and

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The bulla as a common cause for pneumothorax has attracted increasing attention. Its growth to a giant air cyst with crippling pressure effects and respiratory invalidism is less well known. A return of useful respiratory capacity in the afflicted patient has been indicated already in various reports by removal of the air cysts¹, however, many physicians emphasize an underlying pulmonary emphysema as insurmountable in treatment and allow the disease process to run its inexorable course. The potential for rehabilitation in many cases of advanced giant air cystic disease merits more notice, while the importance of associated emphysema should receive further investigation. This paper is prompted by a personal experience, between 1951 and 1953, with 11 respiratory invalids who had giant air cystic disease and whose lungs were restored to useful function by the use of a limited excision.

Air cysts of the lungs are classified with respect to the point of origin from the tracheobronchial tree. The origin of this disorder in the subpleural end-bronchiole or the alveolar duct is pointed out by authorities and observed in this experience. The peripheral origin differentiates cystic bronchiectasis, congenital cystic disease, and cystic hypogenesis of the lungs, which arise from more major bronchi and have bronchial structural characteristics. Other cystic lesions, especially air cysts with suppurative pneumonia in children, present perplexing problems, however, management of the lesions rarely appears to be handicapped by insurmountable pulmonary emphysema.

CLINICAL FEATURES

Clinical reports and the 11 cases indicate a preponderant incidence of the disease in men throughout adult life, from 21 to 69 years. The known duration of symptoms before the invalid state ranged from two months to nine years. A diagnosis was made of pulmonary emphysema with cystic changes at onset of disability, but definitive treatment was deferred because of emphysema. No asthma, allergy, or sensitivity was found in these patients, but occasionally these are reported. Interesting also was the failure to obtain convincing data on prior suppurative pneumonia or other lung disease necessitating hospital care. Smoking habits and known inhalational hazards could not be correlated.

Signs and Symptoms—The group of 11 patients were in good health and had no complaints of respiratory disorder prior to the onset of symptoms attributable to air cyst. After their onset, the symptoms were indistinguishable from those expected in chronic progressive pulmonary emphysema. These included susceptibility to

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1. Waring, F. C. Jr. and Lindsay, G. E. Surgical Management of Giant Air Cysts of Lungs. *Physiology Improvement After Resection*. *Ann. Rev. Tuberc.* 62:579-586, 1951. Dyer, D. J., and Samson, F. C. Surgical Treatment of Giant Emphysematous Blebs and Pulmonary Tension Cysts. *J. Thoracic Surg.* 20:729-744, 1950. Allbritton, F. F. *Thoracic Surg.* 16:179-194, 1947. Coyle, F. N., and Blum, H. *Thoracic Surg.* 16:179-194, 1947.

2. Moersch, H. J., and Cuvert, O. T. Pulmonary Cysts. *Physiology and Surg.* 16:179-194, 1947. Coyle, F. N., and Blum, H. *Thoracic Surg.* 16:179-194, 1947.

frequent colds, irritative cough, hemoptysis, expiratory wheezing, dyspnea, weakness, precordial palpitation, anxiety reaction, and cyanosis rather late in the course of the disease. Degenerative arthritis was not present in the dorsal spine and rib joints. Depressed diaphragms were observed as expected because of the rise in intra-



Fig 1—Bronchography fails to opacify the giant air cyst or indicate the point of origin from bronchial tree. The major bronchi visualized appear normal.

thoracic pressure. Red blood cell and hemoglobin concentrations were not above normal limits, but circulating cell mass and volume studies were not done. Electrocardiograms showed strain of the right side of the heart inconstantly. In three cases a large, tender liver and pitting edema of the ankle indicated insufficiency of the right side of the heart. Other symptoms arose not infrequently from interval complications. These included (1) rupture of the cyst with pneumothorax (6 out of 11 cases), precipitating surgical attention, (2) hemorrhage, and (3) infection (1 case). Acute chest pain, fever, hemoptysis, cough, and increased shortness of breath aggravated any preexisting disorders of the cardiorespiratory function and pointed to one of these complications.

A useful point in clinical evaluation has been an estimate of size of an air cyst before the symptoms occur with exercise. On a conventional roentgenogram, an uncomplicated air cyst has been found to exceed 30% of the total lung area before onset with exertion of expiratory wheeze, bronchospasm, and tachypnea. Patients with uncomplicated cysts approaching 20% are followed for the first evidence of respiratory symptoms. If chronic pulmonary emphysema or other diffuse disease caused these symptoms, they should reasonably be manifest at this stage. Later, with increased size and the development of symptoms that suggest impaired ventilation, a distinct clinical syndrome is manifest. The historical relation of symptoms to the size of the cyst may have real prognostic value.

Roentgenography—Symptomatic giant air cysts appear on the conventional chest roentgenogram. Absence of the fine structural markings in the cystic area provides contrast with the compressed neighboring lung. Retained secretions and chronic localized pneumonia in the adjacent lung tissue may add to the radiodensity in this area. The major consideration lies in determination of the isolated giant cyst from the scattered focal lesions common to various lung diseases. Conventional techniques usually serve this purpose adequately. Specialized roentgen studies have much academic interest. Angiocardiography visualizes displaced major pulmonary vessels and makes opaque the fine vascular structures. After removal of the air cyst, a return to a normal pattern may be demonstrated according to the surgery performed. Tomography (body section roentgenography) is used to delineate cyst markings and often to clarify the extent of disease. Differentiation of pneumothorax from giant air cyst may be possible by its use when otherwise in doubt. Bronchography does not define these cysts, but does have indirect value. Under the existing physiological conditions, filling of the end-bronchiole and the alveolar duct is usually poor. The major bronchi visualized appear normal (fig 1). The importance of bronchography lies in excluding cystic bronchiectasis, congenital cystic disease, and cystic hypogenesis, which are associated with major bronchial origin and may be demonstrated by this technique.

CAUSE OF GIANT AIR CYSTS

The importance of concurrent pulmonary emphysema etiologically remains undetermined. However, these conditions for giant cyst formation and growth seem

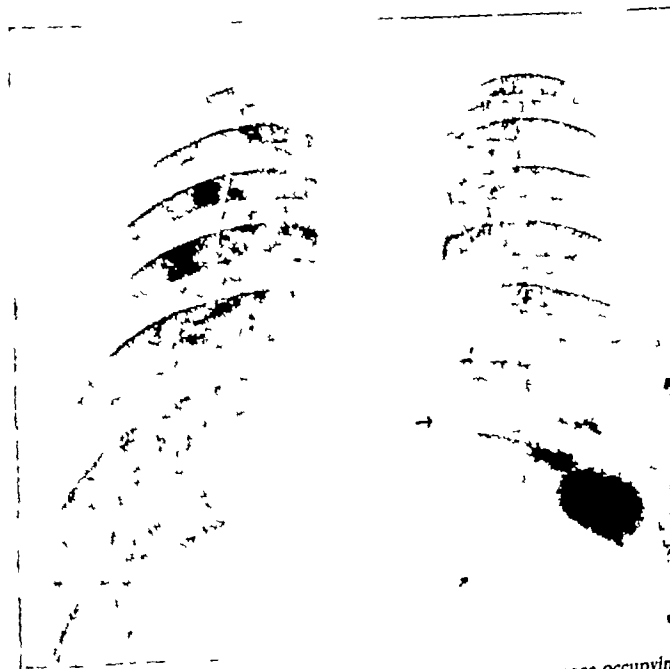


Fig 2—Giant air cyst assumes major importance as a space-occupying lesion with pressure effects.

necessary: (1) chronic inflammatory or fibrous tissue reaction in or around a terminal bronchiole (less than 0.5 mm) with narrowing of its lumen (check valve mechanism)³, (2) fragmentation or disruption of elastic tissue component in the adjoining peripheral alveolar walls and visceral pleura⁴ (loss of retractile force), and

3 Spain D M and Kaufman, G. The Basic Lesion in Chronic Pulmonary Emphysema. *Am Rev Tuberc* 68: 24-30, 1953.
4 Miller W S. *The Lung*, Springfield Ill., Charles C Thomas Publisher, 1937.

(3) interference with the normal collateral ventilation or air drift in the area affected by chronic inflammatory or fibrous reaction (airtight cyst wall)

Observations at the operating table and study of surgical specimens provide supporting data. Terminal bronchioles providing the valvular mechanism may be seen

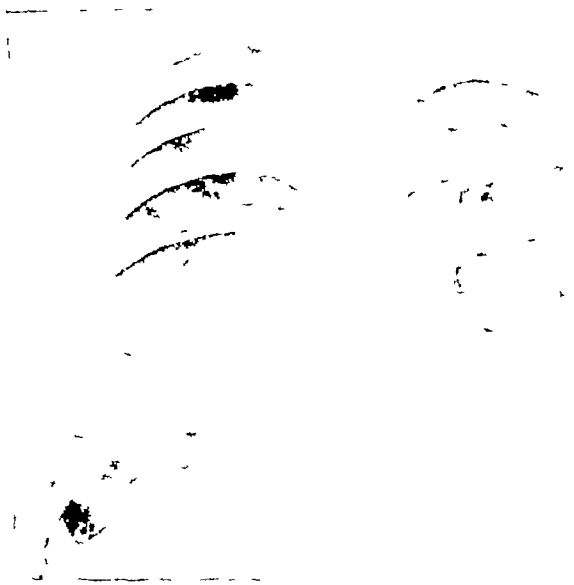


Fig. 3—Thoracotomy shows peripheral origin of the giant air cyst in figure 2. Restoration of the residual functioning lung may be obtained by simple excision of the lesion

in the floor of the cysts. Histologically there is seen a chronic inflammatory lesion and no cartilage is found in or at its communicating orifice. The cyst wall is fibrous with scattered fragments of elastic tissue. Adjacent lung tissue may show extensive organizing pneumonia. Anthracotic pigment is often interspersed in broad areas of hyaline scar, as is blood pigment from old hemorrhage. Within the cyst, epithelium is absent or indifferent.

CLINICAL MANAGEMENT

Initial consideration in the symptomatic patient need be given to such supportive measures as avoiding inhalation of irritants including tobacco smoke, protecting against exposure to colds and infection, and receiving general rest. Immediate treatment with forced oxygen therapy or sedation has real dangers. Too prompt correction of lack of oxygen or direct effect of a narcotic on the chemoreceptors raises the hazard of carbon dioxide intoxication. A gradual adaptive regimen of these agents offers increased safety and no less benefit.

Asymptomatic or uncomplicated air cysts do not demand treatment until a complication occurs. The decision for surgical excision rests on symptoms attributable to a giant air cyst or a complication (fig 2). The extent of pulmonary emphysema or other chronic pulmonary diseases deserves careful evaluation but rarely constitutes absolute contraindication to surgery. Improved respiratory function can be expected from removal of a major space lesion of an air cyst type. The question of an operation in a patient without respiratory reserve has been a major concern to some surgeons. With strong opinion to the contrary, functional studies offer little help in ascertaining whether an operation can be per-

formed. Such studies provide no reliable base line or standard from which to deny any patient the possible benefits of excision, however dyspneic he may be because of this form of giant air cyst of the lung. Potential function in a trapped lung, which is recoverable by surgery, is not measurable beforehand in the laboratory. This is due to the dead space of the giant air cyst, associated bronchospasm (activated Hering-Breuer reflex⁹), compression, stagnant secretions, and chronic infection in adjacent lung tissue. A satisfactory preexisting history of respiratory reserve and the natural history of this disorder demand major consideration for this vital decision.

Bronchoscopy is performed routinely to establish a clear, unobstructed airway and for aspiration of retained secretions. Also, endobronchial tumor and foreign bodies should be excluded. Excision is recommended for the symptomatic giant air cyst of the lung whether bilateral or unilateral (fig 3). Preservation of all available useful lung tissue should be a rule (fig 4). Simple cystectomy is the procedure of choice. Attached segments of airless lung, even if injured by chronic infection, may be restored to function to the patient's advantage.

In this group of 11 patients, including 3 with bilateral air cysts, involving 12 operations, there was no mortality during the operations or in the hospital. Ten of the pro-



Fig. 4—At surgery giant cysts may occupy most of the chest, while the airless lung is displaced or appears as an insignificant appendage adjoining the cyst. Conservative and restorative surgery is desirable.

cedures were local excision and two lobectomy for associated fibroanthracosis. Postoperatively, symptoms of respiratory insufficiency subsided and respiratory function improved continuously over a period of months. Restoration of health and useful breathing reserve has

been gratifying Follow-up to a maximum of two years is too short for future prognosis, but the improvement continues to be maintained Re-formation of giant cysts has not been observed nor recurrence of symptoms associated with emphysema

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CLINICAL NOTES

DIABETES INSIPIDUS, DIABETES MELLITUS, AND INSULIN RESISTANCE WITH HISTIOCYTOSIS

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and

Robert J Poppitt, M D , Miami, Fla

The coexistence of diabetes insipidus and diabetes mellitus is rare In 1931, Dr Frank Allen and one of us (L G R) presented 2 typical cases and made reference to 10 other cases reported in the literature In the intervening years 18 additional cases have been described, and, with the case here presented, the total number is now more than 30 The history of the two diseases will not be repeated here, emphasis will rather be laid on the modern concepts of the two diseases, especially as to pathogenesis An attempt will be made to interpret the nature and course of the illness in terms of pathology histology, and endocrinology and in the light of advancing science In his "Novum Organum" Francis Bacon stated that all truth must be reinterpreted from time to time in the light of newer knowledge Thus, in 1897 the great German pathologist Senator discussed the disease in terms of local changes in the kidney, referring to the piqué experiments of Claude Bernard and the possible role of certain lesions of the nervous system in the causation of glycosuria and polyuria This was prior to the recognition of histiocytosis and reticuloendotheliosis, of hormones and their controlled balance in health and imbalance in disease, and of the role of individual cells in endocrine organs as the source of particular hormones Since Senator's day endocrinology has emerged, and diabetes insipidus and diabetes mellitus now are considered endocrine diseases However, lesions of the hypophysis and of the third ventricle are still considered important in the causation of these diseases, as are lesions in the hypothalamic regions The constantly increasing number of reported cases of coexistence of these two diseases makes mere chance appear a most unlikely explanation of their relationship The question arises whether it is possible to find an adequate pathological basis for both syndromes in the following case and other cases

REPORT OF A CASE

A woman, 60 years of age, was first seen on Dec 16, 1946, with the complaints of polydipsia, polyuria, and poor appetite Her family history revealed no tendencies to diseases of any significance During childhood she had had measles, mumps, whooping cough, and a tonsillectomy In 1918 she had been hospitalized for a "nervous breakdown" In 1943 she had

been informed that she had an "exhausted heart" The patient's husband was living and had thromboangitis obliterans, her married life was happy and contented, she had three sons, the youngest now 24 years of age The onset of the present illness had been sudden and dramatic In 1946 the patient and her husband had signed a contract and realized immediately thereafter that they had been swindled She had suffered great mental anguish, within 10 minutes her mouth had become dry, and she had then experienced inordinate thirst and drunk huge quantities of water She had suffered continuously since that time from polydipsia and polyuria, which were temporarily relieved by pituitary preparations She was excreting 8 to 10 liters of urine daily Physical examination showed that the height was 5 ft 3½ in (160 cm), weight, 147 lb (66.7 kg), there was a geographic tongue and lesions of cheilosis at the corners of the mouth, the patient wore complete dentures, the pulse rate was 72 per minute, and blood pressure was 140/80 mm Hg Other physical findings were normal



Fig 1—Photomicrograph of a representative section of the vertebral marrow Almost the entire marrow is replaced by granulomatous tissue The darker staining areas are islands of hematopoietic elements that still remain The bone trabeculae are thin and atrophic (× 27)

When first seen by one of us (L G R), one of her major problems was fear, but this was soon dispelled to a large extent During several years' therapy, pituitary medicaments were given in all forms posterior pituitary injection, vasopressin injection (Pitressin), vasopressin tannate injection, and posterior pituitary preparations administered by nasal spray and insufflation The principal therapy throughout was with vasopressin injection In 1948, infection and pain in the gallbladder area developed Roentgen examination revealed a single stone In February 1949, glycosuria and elevation of the fasting blood sugar was first detected Since the patient objected to diet, she was given insulin, 5 to 10 units daily, the dose gradually increasing to 35 units For two years there was a typical course of diabetes insipidus and diabetes mellitus The patient lost 7 lb (3.2 kg) in weight and suffered occasional attacks of dizziness and colds but remained fairly healthy, taking three injections of vasopressin injection and 35 units of insulin daily In 1951, infections began to develop

The patient was first admitted to St Francis Hospital in October, 1951, for severe indigestion and pain in the gallbladder The disease ran a febrile course with mild leukocytosis Fever and

pain gradually subsided but the insulin requirement increased to 60 units daily. The second admission was in February 1952 for acute appendicitis with marked leukocytosis. Appendectomy was performed by Dr. John W. Snyder. Insulin requirement increased to 100 units daily. Blood sugar was markedly elevated. The patient lost about 20 lb (9.1 kg) in weight. She died after the insulin intake was increased to 150 units. Post-mortem insulin protamine zinc insulin and isophane insulin (NPH).



Fig. 2—Higher magnification of a part of fig. 1 showing replacement by histiocytes, between which are calcium deposits and collections of lymphocytes, plasma cells and polymorphonuclear leukocytes ($\times 307$)

were tried. The third hospital admission was for an abscess that had developed on the thigh. The temperature was 102 F, leukocyte count, 17,500 per cubic millimeter, erythrocyte count, 5,670,000 per cubic millimeter, and hemoglobin level, 15 gm per 100 cc. The blood sugar level was over 400 mg per 100 cc, and small amounts of sugar appeared in the urine. The abscess was opened and drained. Recovery was satisfactory, but the insulin intake was markedly increased. Regular insulin, 150 units and globin zinc insulin 100 units were given each morning, and an additional 200 units of globin zinc insulin were given before dinner. Only after the insulin intake was raised to 600 units daily was the fasting blood sugar brought to the level of 200 mg per 100 cc. The patient was admitted to the Joslin Clinic in May 1952. There she was very carefully studied and given extensive physical, roentgen, and blood chemistry examinations and various therapeutic regimens, including intravenous administration of insulin in large doses. She was also given cortisone and corticotropin (ACTH) alone and in combination without benefit. Her insulin resistance was studied by Dr. Stadie of Philadelphia. The blood serum was definitely insulin antagonistic, but not markedly so. Allergy studies were essentially normal. By June 25 the patient was taking 1,700 units of insulin a day. On her return to Miami 13 weeks after admission to the Joslin Clinic, the insulin requirement increased to 3,300 units a day. She was readmitted to St. Francis Hospital on Aug. 13 for a large abscess on the thigh, which was incised and drained. Subsequent to this the patient went into coma without ketosis, and died.

The pathogenesis of the diabetes insipidus was thought to be a destructive lesion of the posterior lobe of the pituitary. Emotional trauma was thought to be a factor in initiating the diabetes

metrial polyp. The brain weighed 1100 gm. The base at the base exhibited marked atherosclerosis and several petechial hemorrhages in the left lobe of the anterior pituitary appeared. The normal pituitary lobe was small, of the size of the section.



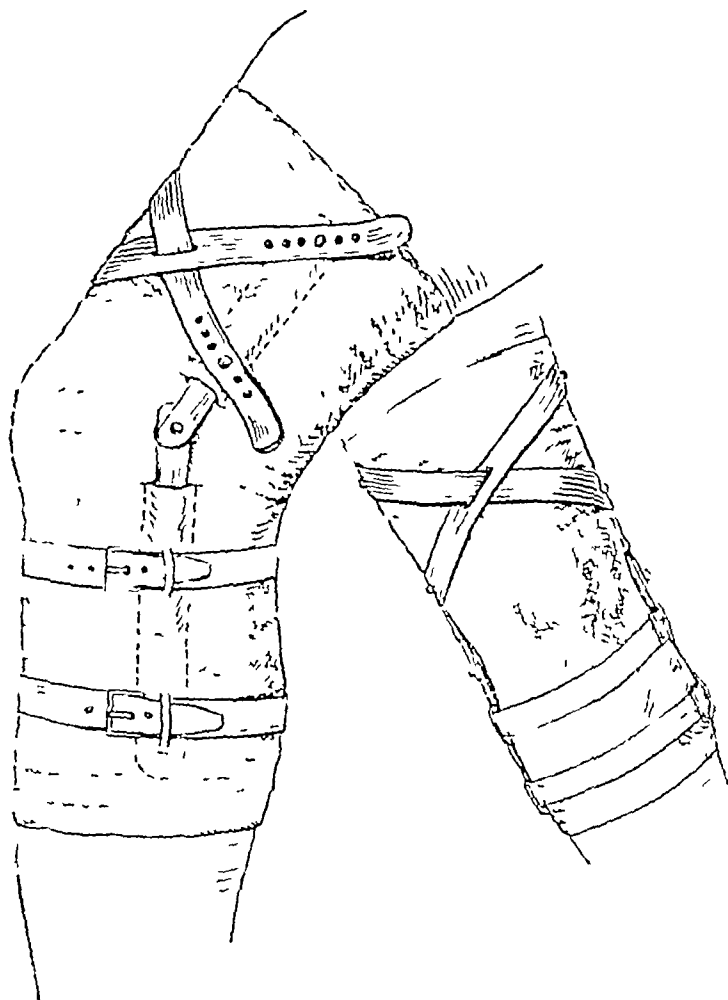
Fig. 3—Photomicrograph of a section of the pituitary gland showing distorted architecture and scattering of the posterior lobe in the anterior portion of field ($\times 27$)

metrial polyp. The brain weighed 1100 gm. The base at the base exhibited marked atherosclerosis and several petechial hemorrhages in the left lobe of the anterior pituitary appeared. The normal pituitary lobe was small, of the size of the section.

SIMPLE KNEE CAGE BRACE

Philip Lewin, M D , Chicago

A knee cage brace (see figure) is helpful in a variety of knee disorders such as sprains, strains, arthritis, and synovitis. The construction of the brace requires that measurements be taken above, below, and over the patella. A long, elastic knee support is woven according to these measurements so that the fit is snug but not constrictive. Lining the popliteal area of the support with



Knee cage brace side and front views

chamois reduces irritation. The support should include pocket slips on each side, which receive rivet-jointed metal bars, and loops for positioning the straps below the knee. The brace is held from slipping without pressing on the patella by these straps and the crossed straps above the knee, one of which is threaded through a slit in the other. The upper straps pass across the front of the leg and are secured at the sides with adjustable fasteners to the upper segments of the metal bars.

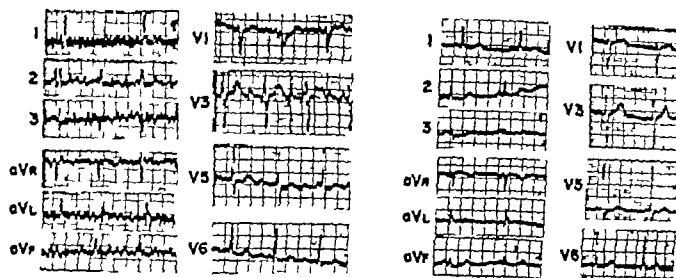
55 E Washington St

ELIMINATION OF ELECTROCARDIOGRAPHIC DISTORTION DUE TO SOMATIC TREMOR

Bernard H Pastor, M D , Philadelphia

One of the common artefacts that make electrocardiographic interpretation difficult is due to tremor of the somatic muscles. This produces an irregular vibration of the baseline that may partially or completely obscure the

smaller waves of the tracing. Clinical electrocardiography is feasible only because no large muscle masses, except the heart muscle, are in motion in the normal subject at rest. Tremor is a troublesome factor in many nervous patients but is intensified in thyrotoxicosis and is particularly intense in patients with a neurological disturbance such as paralysis agitans (parkinsonism). It has previously been recognized that the influence of tremor can be minimized in routine tracings by the application of the standard limb electrodes to the forearm and inner aspect of the lower leg rather than to the wrist and the ankle. This reduces but does not eliminate the effect of tremor in most cases.



A electrocardiogram taken on a patient with standard technique. There is marked distortion due to somatic tremor. B electrocardiogram taken on the same patient with Welch electrodes placed on shoulders and thighs. Note absence of distortion.

A simple technique for the elimination of the distorting effect of tremor on the electrocardiographic record involves the use of a set of self-retaining electrodes such as the one described by Welsh.¹ The electrodes are applied to the shoulders and thighs of the patient instead of on the extremities. This is technically satisfactory since an electrode placed anywhere on an extremity records as though it were at the junction of the extremity with the trunk, as is evident from the fact that the pattern of the limb leads is uninfluenced by the position of the extremities with respect to the trunk.

From the Medical Service, Veterans Administration Hospital.
1. Welsh W. Self-Retaining Electrocardiographic Electrode. J A M A 147:1042-1044 (Nov 10) 1951.

Paul Ehrlich's Library—As far as we know, Ehrlich's headquarters, the Institute of Experimental Therapy at Frankfurt a M., had no librarian, and this was just as well. Ehrlich's study served as his library and he was his own librarian, books and journals covered tables, chairs and sofa, and were piled on top of each other practically from floor to ceiling. In the earlier days his factotum Kaderreit had to clear the books off the sofa when important guests were expected, but later on it was found that time could be saved by leaving the books where they were. No systematic search of this hodge-podge of literature was possible, only Ehrlich himself was able to find anything, and his ire fell upon anybody who tried to bring order into what was to everybody but him utter chaos. Ehrlich always found it difficult to part with borrowed books, frequently, the reason was that he had adorned the copy with notes, sketches, and drawings to such an extent that he was embarrassed to return it. On the other hand, he usually spent more than one half of his salary on books—and this probably did not include his extracurricular reading. Like many men forever engrossed in difficult intellectual tasks, he was extremely fond of relaxing with a detective story. The scientific methods of Sherlock Holmes appealed particularly to him, and we are told that Sir Arthur used to send him complimentary copies inscribed "to my great colleague"—Karl A. Baer, Paul Ehrlich (1854-1915) and the Printed Word, *Bulletin of the Medical Library Association* July, 1954.

